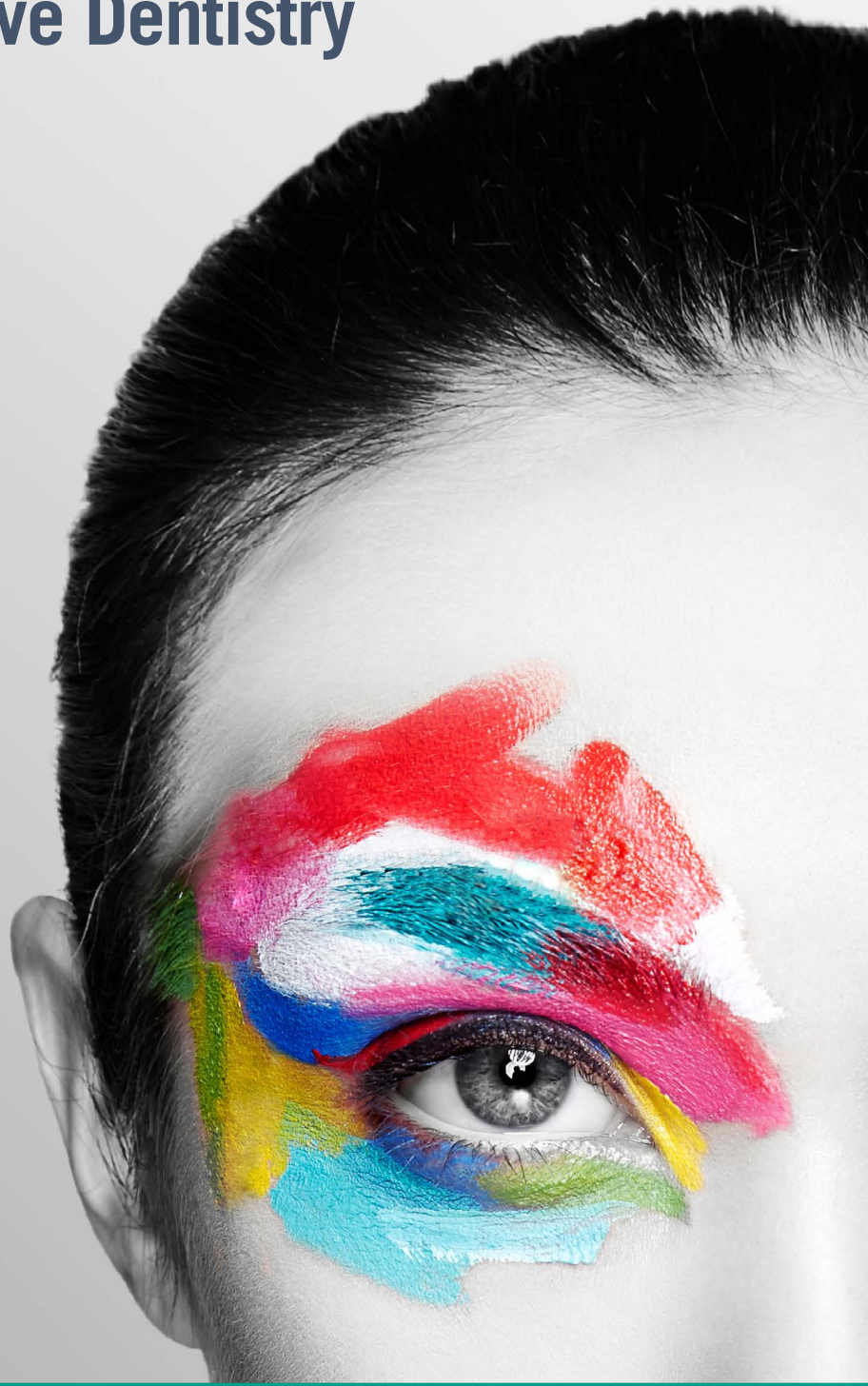


G-ænial™ A'CHORD:

The Universal Composite That
Simplifies Restorative Dentistry

By Terri Lively



Since 1921
100 years of Quality in Dental



G-ænial™ A'CHORD is a unishade universal composite that uses five core shades to deliver all 16 shades of the Classic VITA® scale. However, that is only one reason our experts chose this restorative material over the others on the market. G-ænial™ A'CHORD has three advantages that make it unique versus other unishade composites on the market.

1. G-ænial™ A'CHORD focuses on simplification. Not only is the simplified unishade system easier for shade matching, but G-ænial™ A'CHORD has simplified handling.
2. G-ænial™ A'CHORD's esthetics are also a vital feature. The composite features natural fluorescence and long-lasting gloss for virtually invisible restorations.
3. G-ænial™ A'CHORD's revolutionary technology further differentiates it from other composites on the market. Its proprietary fillers deliver high stain and wear resistance, as well as excellent radiopacity.

All are great reasons why G-ænial™ A'CHORD can transform the way clinicians approach composite restorations. Next, we will look at all the features of this innovative material and how it is able to produce high quality results.

Simplified Shade Matching That Optimizes Inventory

GC America's latest advanced universal composite was formulated with the busy clinician in mind. G-ænial™ A'CHORD has five core shades, which cover the shade matching needs of 90 percent of clinical cases. For unique or challenging cases, GC provides nine supplemental shades to help dentists customize the shade for a perfect match.

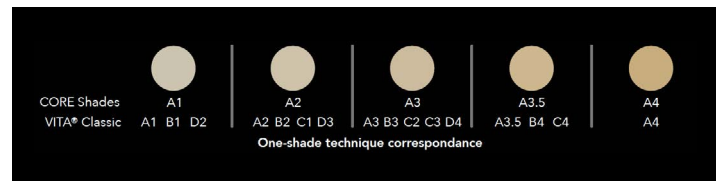


Figure 1: The 5 Core Shades of G-ænial™ A'CHORD

Among her leadership roles in the dental community, Karyn Halpern, DMD, MS, owns a multi-specialty, high-tech private practice in Port Jefferson Station, NY. She has been using G-ænial™ A'CHORD for some time now and appreciates how GC's simplified unishade system allows her to optimize her inventory.

"The G-ænial™ A'CHORD composite system has a simplified unishade system that has five core shades that can achieve the esthetics of 16 Classic VITA® shades," Dr. Halpern says. "It's cumbersome to have every available composite shade in your office, and it's nice to be able to get the results without having to stock all these supplies in your office, taking up valuable storage space."

Dental restorative materials are available in different opacities and translucencies, Dr. Halpern explains. She chooses which types to use based upon the shade and translucency of the prep, adjacent and opposing dentition, and the desired shade of the final restoration. She says clinicians should choose systems that simplify this process and are appropriate for both anterior and posterior restorations.

Unishade composites often claim they can help take the guesswork out of shade matching. Dr. Halpern says material characteristics that can simplify workflows and clinical challenges such as shade matching are significant benefits.

“Anything that you could do to keep the process streamlined and stock less inventory without compromise is going to help,” Dr. Halpern says.

While Dr. Halpern appreciates how some companies have made unishade composites that utilize only one shade for every case, they still have their challenges.

“It seems to work in a lot of cases, but it doesn’t work all the time,” Dr. Halpern says of the one-shade composites.

Dr. Halpern appreciates how G-ænial™ A'CHORD's shade system reduces inventory needed but still has supplemental shades to match a more exacting esthetic.

“The concept behind this product was to give you fewer shades to manage and keep in your inventory, but each shade represents a range of options,” Dr. Halpern explains. As you can imagine, trying to keep one of each shade in any composite system becomes challenging for your assistant to manage and access quickly. But then, there is the physicality of the space they occupy and the cost involved. So, it makes sense to develop a system that’s streamlined and more cost-effective.”

Mark Kleive, DDS, has a private practice in Asheville, NC, and is a visiting faculty member at the Pankey Institute. Dr. Kleive also appreciates simplifying his inventory. He uses the five core shades for fillings and customizes them with the supplemental shades as treatment dictates. Dr. Kleive suggests that dentists limit the number of materials in their core inventory to understand how the materials function and follow the directions for use. Moreover, simplifying inventory benefits the practice from a business perspective.

“Keeping inventories of lots of different materials that you don’t use regularly and that expire is not profitable for running a business,” Dr. Kleive says.

More Great Features That Our Clinicians Appreciate

Simplified shade matching and related inventory optimization are not the only reasons clinicians choose G-ænial™ A'CHORD. The material also features a proprietary Full-coverage Silane Coating (FSC) and High-performance Pulverized

CERASMART® (HPC) filler to deliver excellent physical and esthetic outcomes, including high wear and stain resistance and high color and gloss retention.

- **FSC technology** covers the entire filler surface, which helps create a homogeneous and dense dispersion of fillers. As a result of its ultra-fine filler technology, FSC allows the particles to tightly bond to the resin matrix, providing high strength and great esthetics in less chair time.
- **HPC-filler technology** is an inorganic filler of 300nm barium glass, and 16nm fumed silica then pulverized to 10µm. The homogeneous nano-fillers are dispersed into the resin matrix in high density and polymerized by heat to improve blending and strength.

Figure 2: G-ænial™ A'CHORD before (left side of tooth) and after polishing (right side of tooth).



As a result of the high filler content and the efficient fusion of the filler and resin matrix, clinicians may observe that the restoration presents excellent physical properties and little degradation over time. Also, the specific mix of monomers in the material helps stabilize the esthetic over time, providing excellent color and gloss retention.

In addition to excellent wear resistance and appearance characteristics, G-ænial™ A'CHORD has additional features clinicians appreciate. Like G-ænial Sculpt®, this universal composite has superior handling due to its non-sticky monomers that result in a unique consistency that clinicians can easily sculpt and brush. In addition, it is more manageable

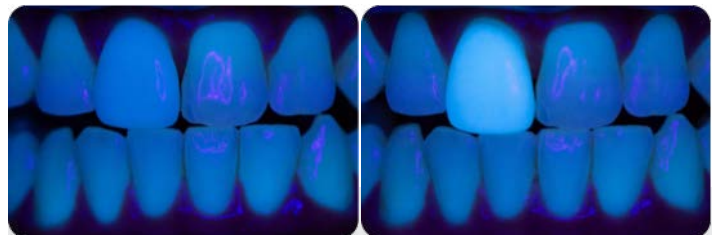


Figure 3: G-ænial™ A'CHORD veneer on tooth #9 vs conventional composite veneer

than other composites with interacting monomers that can lead to a sticky feel, so it feels good in the clinician's hand.

G-ænial™ A'CHORD features natural fluorescence that matches that of the patients' surrounding dentition in any lighting condition, including light in the near-UV range (like blacklights) that can cause conventional composite to glow.

The material also features high radiopacity. At 318% Al, clinicians can easily identify restorations on radiographs. Abdi Sameni, DDS, Clinical Associate Professor of Dentistry at the Ostrow School of Dentistry at the University of Southern California, appreciates the radiopaque feature. In his West Los Angeles practice, Dr. Sameni prefers, when possible, to choose materials where he can detect problems as early as possible. For him, the ability to identify restorations both with x-rays and visually outweighs other factors.

"When considering a material, I want the ability to proactively diagnose disease conditions as the material ages, such as leakage or recurrent decay, which can lead to further tooth loss," Dr. Sameni says.

One Material, Multiple Indications

G-ænial™ A'CHORD is a true universal composite as it is designed for use in both anterior and posterior areas, as well as for both large and small cavities. Clinicians can use it for the following direct restorative indications:

- All classes of caries, from I-V
- Other restorations, like root surface cavities and wedge-shaped defects
- Cosmetic procedures like diastema closure and veneers

Dr. Sameni appreciates how G-ænial™ A'CHORD performs in the esthetic zone. However, the enamel layer needs easy polishability for anterior teeth. He credits this characteristic to the filler technology.

"G-ænial™ A'CHORD, because of its filler technology and reflectivity, is an ideal material for the anterior region because it is much easier to polish and sculpt," Dr. Sameni says.

G-ænial™ A'CHORD's Nine Supplemental Shades

Opaque Shades: Three opaque shades for masking discolorations and preparation lines



Figure 4: Opaque A-Shades

Enamel Shades: Two enamel shades to ensure lifelike restorations

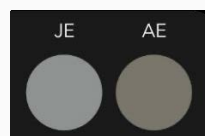


Figure 5: Enamel Shades

Bleach Shades: Two bleach shades for matching bright smiles

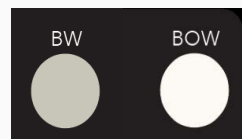


Figure 6: Bleach Shades

Cervical Shades: Two additional A shades adapted for a more mature population



Figure 7: Cervical Shades

Nine Supplemental Shades That Make a Difference

In addition to G-ænial™ A'CHORD 's five core shades, clinicians can use nine supplemental shades to further customize the esthetic, including Bleach, Opaque, Cervical, and Enamel. Each of these shades is designed to be used to layer with the core shade to produce a lifelike result for challenging cases:

“With the testing, I've done so far, I was happy with the consistency and handling of the composite.” Dr. Halpern says. “It handles nicely, and the shades I had chosen based on the guide very closely matched the shade I was looking for.”

Dr. Halpern thinks that GC's approach to shade matching is similar to what is happening with cement.

“Cement manufacturers are trying to deliver universal cements that offer unishade simplicity. Maybe you can have one or two universal shades and then use different components within the system so that you can modify them to get customized results,” Dr. Halpern says.

“...if the 16 shades of the VITA Classic Guide cover only 6% of human tooth color range from the lightest light to the darkest dark, how could a single shade of restorative composite be expected to match them all perfectly?”

—Dr. Pitel

To some clinicians, having additional supporting shades might undermine the concept of a unishade composite, especially since one of the main benefits is reducing inventory. With unishade composites, you could potentially use them in each case that calls for a resin treatment. However, single-shade matching with one universal shade, while well-intentioned, is difficult to achieve.

Dr. Kleive acknowledges this fact and adds that single-shade composites are still best for posterior cases. He says that while the concept of a single-shade composite to replace tooth structure is a brilliant idea — it works in very few and specific situations. Usually, a single shade works best in the posterior, where esthetics aren't as high a priority. In the esthetic zone, he appreciates how G-ænial™ A'CHORD 's nine additional shades provide more options to make a match with surrounding dentition.

“Anterior teeth, on the other hand, have a higher esthetic demand, and the dentin and enamel components are best replaced with a core shade of composite that matches with the ability to enhance the composite with supplemental shades,” Dr. Kleive explains.

Dr. Sameni agrees that the supplemental shades have significant benefits in specific restorative procedures.

“Most single-shade composites lack the ability to offer the opacities and translucencies needed to restore large class IV restorations or to mask highly discolored teeth,” Dr. Sameni explains. “G-ænial™ A'CHORD appears to have solved this problem by offering a select few uniquely designed shades that still have the single shade benefit, but when needed can be layered to accommodate the problems as mentioned above.”

However, several unishade composites are currently on the market that promise that one shade can match all 16 Classic VITA shades. The question is whether clinicians find this claim believable and whether they would trust it. Mark Pitel, DMD, is a cosmetic, restorative, and implant dentist in Poughkeepsie, NY, and Associate Clinical Professor of Operative Dentistry at the Columbia University College of Dental Medicine. Dr. Pitel says that, whether or not it is believable, shade matching with a single-shade composite in all cases is unlikely.

Dr. Pitel explains that the shades of human teeth are found to be very widely distributed over the yellow, orange, and red portions of the visible spectrum. Though it is still the most popular shade matching system in restorative dentistry, the Classic VITA® shade range represents only about 6% of that color range.

“That’s why dentists sometimes find it difficult to match a tooth shade to one of the 16 VITA shade tabs,” Dr. Pitel explains. “So, having composite resins that are designed to blend in, reflect and transmit the naturally occurring colors of an ‘extended range’ of tooth shades is certainly a good idea. But if the 16 shades of the VITA Classic Guide cover only 6% of human tooth color range from the lightest light to the darkest dark, how could a single shade of restorative composite be expected to match them all perfectly?”

Dr. Pitel says there is another major factor that challenges the single, universal shade strategy.

“Teeth are compound structures, and the dentin and enamel often combine to present vastly different optical properties. For example, dentin scatters light very efficiently and is therefore relatively opaque. It is also highly fluorescent but lacks opalescent qualities,” Dr. Pitel says. “Enamel, on the other hand, has minimal light-scattering properties, making it very translucent. It also fluoresces, but far less than dentin. And enamel is highly opalescent.”

Dr. Pitel says that enamel’s opalescent property has a significant impact on the observed colors of teeth depending on the direction of the ambient light. Therefore, it would be unlikely that a single universal shade and opacity of composite could represent the diverse optical properties of these different biologic structures.

“Like most dentists, I appreciate that manufacturers like GC have begun to develop composite systems like G-ænial™ A'CHORD , which have found a way to deliver the esthetics of the 16 Classic VITA® shades in just 5 core shades. That means I can stock fewer overall products and spend less time worrying about finding an exact match while feeling more assured that I’ll get one,” Dr. Pitel says. “I think this is especially useful for posterior direct restorations where the esthetic requirements are often not as high.”

However, Dr. Pitel also wants a complete restorative system with the versatility to match anterior teeth requiring more detailed esthetics.

“For those restorations, I may want or need to have an option of a more spacious dentin shade or a high translucency enamel,”

Dr. Pitel says. “The G-ænial™ A'CHORD system includes those, as well as bleach and some very dark tooth shades, which would fall outside of the standard Classic VITA® shades.”

How To Get The Most Out of Your Composite

Choosing the proper materials is an important decision which will directly impact the success of your composite restorations. Success largely has to do with technique. Our experts have some advice for successfully incorporating G-ænial™ A'CHORD into your dental armamentarium.

Success starts with product familiarity. Dr. Pitel says that knowing the relevant technical details about a product is essential. For example, understanding the proper depth of cure is critical to get right, he says.

“Take, for example, a composite resin’s depth of cure. A higher depth of cure means fewer layers are necessary. The

“Teeth are compound structures, and the dentin and enamel often combine to present vastly different optical properties.

–Dr. Pitel

shade or opacity of a specific composite may also affect the light-curing times. For example, a dark composite shade like A4 or an opaque dentin shade may have a different curing time than an A2 enamel shade,” Dr. Pitel explains. “Understanding and controlling all these little details which are found in the directions for use can lead either to long-term success with the restoration or failure.”

Dr. Halpern says there should never be a one-size-fits-all approach. Instead, having a few direct and indirect

G2-BOND Universal and G-aenial A'CHORD



Figure 1: Preoperative condition showing defective old MOD composite filling in the mandibular 1st molar and mesial occlusal decay in the mandibular 2nd molar.



Figure 2: A rubber dam is applied to isolate the teeth being restored.



Figure 3: The defective composite filling and recurrent decay is removed from the mandibular 1st molar.



Figure 4: Trident V3 sectional matrix bands, V3 spring clamps (Ultradent) and wedges have been applied.

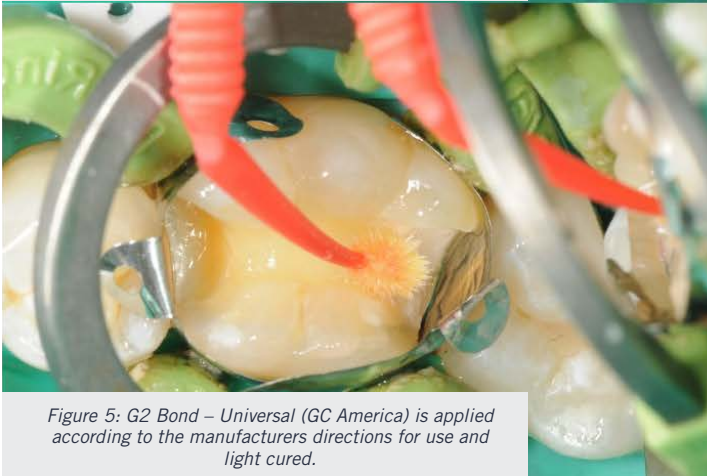


Figure 5: G2 Bond – Universal (GC America) is applied according to the manufacturers directions for use and light cured.



Figure 6: Post op view. The MOD cavity on the mandibular 1st molar and the MO cavity on the mandibular 2nd molar have been restored with G-aenial A'Chord shade A2 (GC America).

Photos courtesy of Dr. Mark Pitel



restorative materials at your disposal allows dentists to select the appropriate balance of strength, function, and aesthetics for specific individual case needs.

“It is important the materials used possess high stain and wear resistance, and maintain marginal integrity,” Dr. Halpern says.

Dr. Halpern says that it is critical to properly plan and use the proper technique in each case. She believes it would be best to pay attention to the recommended steps required for consistent results. Moreover, she says practicing sound isolation and following recommended protocols for the materials and techniques is essential to successful restorations.

“Do not cut corners or skip steps. Instead, take your time and focus on developing your skills,” Dr. Halpern says. “Repetition and consistency are a recipe for success.”

Finishing is another critical area. Dr. Sameni says to get the best esthetics on the finished product, the restoration should respect the tooth’s morphology. For example, when a dentist finishes a restoration with discs and burs, flat areas often are left behind that reflect light differently than the surrounding dentition. He recommends contouring the composite to the tooth’s natural size and shape to avoid creating flat places to limit polishing and reduction needed after placement.

Dr. Sameni also recommends observing the surrounding dentition closely and taking an initial photograph before isolation to help facilitate shade matching, particularly in the anterior. Also, he says at the end of the procedure, the finished composite will appear darker than the surrounding dentition.

“Understanding different opacities of natural tooth in the different locations and replicating that will help match shades much better,” Dr. Sameni says. “Also, choosing a material that has reflective technology, such as G-ænial™ A’CHORD, will make shade matching much easier.”