HIGH PERFORMANCE, ULTRA-HIGH DURABILITY:

Today’s Bulk-Fill Restoratives
Over the years, many clinicians have been instructed that when using a posterior composite to fill a larger or deeper cavity, they had to use 2-mm increments for light-curing. Although new generations of bulk-fill composites have been developed, concerns and misconceptions about their features persist. For example:

- Not all bulk fills are able to cure fully at 4 mm depth of cure
- Risk of gaps/porosities if a large cavity is not filled in a layering technique, or if a compactable composite is used
- Deterioration of the restoration over time
- Poor gloss/color retention
- High polymerization shrinkage
- Difficult handling

Therefore, even though bulk-fill materials offer distinct advantages for practice efficiency, how can clinicians have full confidence in these restorations with these remaining concerns?

The truth is that these materials have improved significantly for predictable success in the practice.
Technology That Makes a Difference

Bulk-fill composites are continually improving, as manufacturers develop features that precisely target clinicians’ concerns about employing these materials.

Look for these innovations:

- Ultra-fine particle formula: creates homogenously dispersed particle surface that resists chipping, while retaining color and gloss better than conventional composite.
- Full coverage silane coating: allows the ultra-fine particles to more tightly bind with the resin matrix to provide higher flexural strength.
- Ultra-high wear resistance: resists wear from compression and opposing forces.
- High flexural strength: resists damage from impact, compression, and opposing forces.
- Low shrinkage stress/volumetric shrinkage: lowers chance of margin compromise and potential for microleakage.
- Depth of cure up to 4 mm: requires no layering or veneering, and only one product needed.
- Low extrusion force needed to dispense product: improves handling and placement.
- High radiopacity: facilitates identification on radiographs.
**G-ænial™ BULK Injectable** is a high-strength ultra-fine particle composite with ideal viscosity, handling, and adaptation characteristics that may be used as a one-step application for bulk filling up to the occlusal surface (up to 4 mm) without the need for capping or veneering with another composite.

- Ultra-high durability due to improved flexural strength, wear-resistance, and low shrinkage stress.
- Color stability to enable the restoration to look as good as the day it was placed.
- Low volumetric shrinkage to help ensure optimal marginal integrity.

**Fig 1.** Preoperative

**Fig 2.** Postoperative

*Class V Restoration*

Case courtesy of Robert Marus, DDS
Superb Handling and Adaptation

Highly stackable and easy to manipulate, G-ænial BULK Injectable provides superb adaptation to the cavity for reduced occurrence of porosities and air bubbles, which can compromise marginal integrity.

This advanced product is an easy, time-saving, one-step solution for filling larger cavities, which will look as great as it did the day it was placed, at each recall.

*If a higher esthetic is needed, G-ænial Sculpt® is the perfect companion product for G-ænial BULK Injectable. G-ænial Sculpt features a “chameleon effect” that may more closely match the shading of existing/surrounding dentition.*

Fig 1. Preoperative

Fig 2. Postoperative

Case courtesy of Jeffrey Lineberry, DDS
High Performance, Ultra-High Durability: Today’s Bulk-Fill Restoratives

Fig 1. Preoperative view of the Class II occlusal/lingual cavity on tooth No. 15.

Fig 2. View of the final Class II occlusal/lingual preparation on tooth No. 15.

Fig 3. The preparation was selectively etched for 3 seconds with 35% phosphoric acid (Selective HV® Etch W/BAC, Bisco Dental), after which it was rinsed with water.

Fig 4. A universal, 8th generation adhesive bonding agent (G-Premio BOND™, GC America Inc.) was applied to the preparation, then light-cured for 20 seconds.

Fig 5. G-ænial BULK Injectable was injected into the cavity to fill the preparation.

Fig 6. View of the completely filled preparation.

Fig 7. View of the final restoration.

Case courtesy of Sam Simos, DDS
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Fig 1. PreOp. Treating teeth Nos. 4 DO and 5 DO. (Tooth No. 3 MO was filled with another brand’s bulk fill composite.)

Fig 2. Preparation. Tooth No. 4 is bigger, so the process on that will be slightly different. Tooth No. 5 is much smaller and more conservative, so it will be a simpler process.

Fig 3. Matrix on. G-ænial BULK Injectable as a base, leaving 2 mm of space occlusal to it for the capping layer.

Fig 4. Tooth No. 4 capped with G-ænial Sculpt A2.

Fig 5. Final fill shot of teeth Nos. 4 and 5. Tooth No. 5 was filled with ONLY G-ænial BULK Injectable. Tooth No. 4 was filled with a combination of G-ænial BULK Injectable and G-ænial Sculpt.

Case courtesy of Joshua Austin, DDS, MAGD
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**How It’s Different**

**G-ænial BULK Injectable** features ultra-fine particle filler technology. When combined with Full-Coverage Silane Coating (FSC) technology, the result is a homogeneous, uniformly dispersed layer. The filler particles more tightly bind to the resin matrix to provide higher flexural strength, which helps prevent chipping and cracking of the restoration.

Some competitive products feature larger particles which may be “plucked” from the surface when subjected to opposing forces within the mouth, leading to the deterioration of the restoration over time.

**Fig 1.** Composite with small, homogenously sized filler is dispersed uniformly, occlusal load is distributed equally and sustains less damage to the surface of material. When high load is applied, large filler particles pluck off easily, causing an uneven surface which leads to a higher degree of wear.

**Fig 2.** The surface of small filler material remains smooth without large gaps, and gloss is retained. When some fillers pluck off, the large filler surface becomes uneven with large gaps. That makes the light scatter irregularly, and the gloss is lost.

As with the wear-resistance example, larger particles may be “plucked” from the surface when subjected to opposing forces within the mouth, leading to the faster deterioration of the gloss level of the restoration over time.
G-ænial™ BULK Injectable features new technology that provides both application and performance benefits, so you can be confident using it for all your bulk filling and lining needs.

- Homogeneously dispersed ultra-fine particle formula provides:
  - High flexural strength and ultra-high wear resistance resulting in durable and longer-lasting restorations
  - High gloss retention
  - Low shrinkage stress/volumetric shrinkage, reducing the possibility of secondary caries by offering better marginal integrity
- Depth of cure up to 4 mm with no capping or veneering required facilitates an easy, one-step filling process
- Excellent viscosity and thixotropy provides high stackability, easy manipulation, and the ability to keep its shape, without slumping
- Optimal adaptation to cavity reduces occurrence of gaps and porosities, which could lead to marginal leakage
- Improved radiopacity allows for easier identification on radiographs
- Will not stick to instrument and is not stringy, which means it’s easy to place and it stays where you put it
About the Company

GC America Inc. is a leading private manufacturer of professional consumable dental care products and one of the fastest growing dental companies in the world. Founded in 1992, we are the wholly owned U.S. subsidiary of GC Corporation, the world’s fourth-largest professional dental consumables manufacturer, which has been based in Tokyo, Japan since it was founded in 1921.

We dedicate ourselves to customer needs and deliver the highest quality products because our cross-cultural corporate identity is grounded in a unique philosophy called “Semui,” a Japanese term drawn from ancient Buddhist teachings that means to put the needs of others ahead of one’s own.

A 2014 recipient of the Deming Prize for total quality management (TQM), GC America is the first U.S. dental company and only the fourth company in the country to earn one of the world’s oldest and most widely recognized total quality awards. We believe advancing and supporting the interests of good oral health on a global scale can change lives for the better, and we strive to demonstrate that commitment every day.

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