

SimpliShade[™] Bulk Fill Technical Bulletin

Description

SimpliShade Bulk Fill is an intra-oral, light-cured, esthetic, resin-based nanohybrid dental restorative that is designed for the placement of direct restorations. SimpliShade Bulk Fill is designed to be used after placement of a dental adhesive, such as a product from the Kerr OptiBond[™] family.

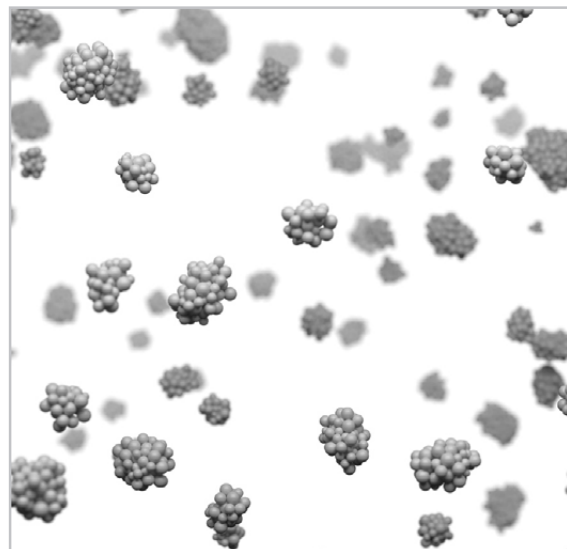
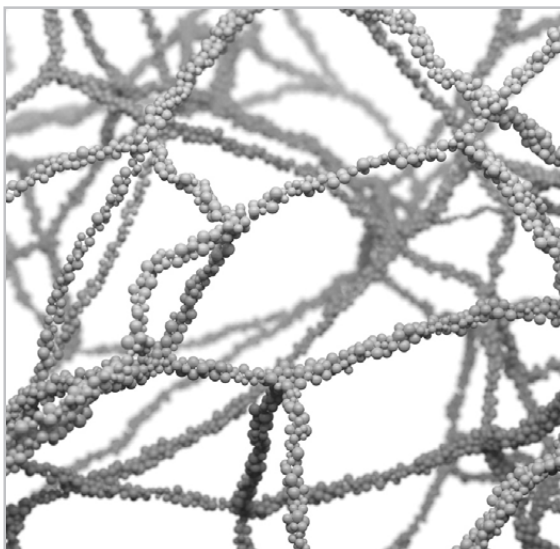
SimpliShade Bulk Fill is available in Unidose[™] compules and syringe delivery systems that are suitable for occlusal surfaces. The product offers high depth of cure and low shrinkage stress and allows a technique in which a cavity up to 5 mm in depth can be filled and cured in a single increment.

SimpliShade Bulk Fill is offered in one universal shade and has been designed to optically blend a wide range of VITA[®] shade guide equivalents. This composite can be polished with a wide variety of polishing discs, rubber cups, and brushes.

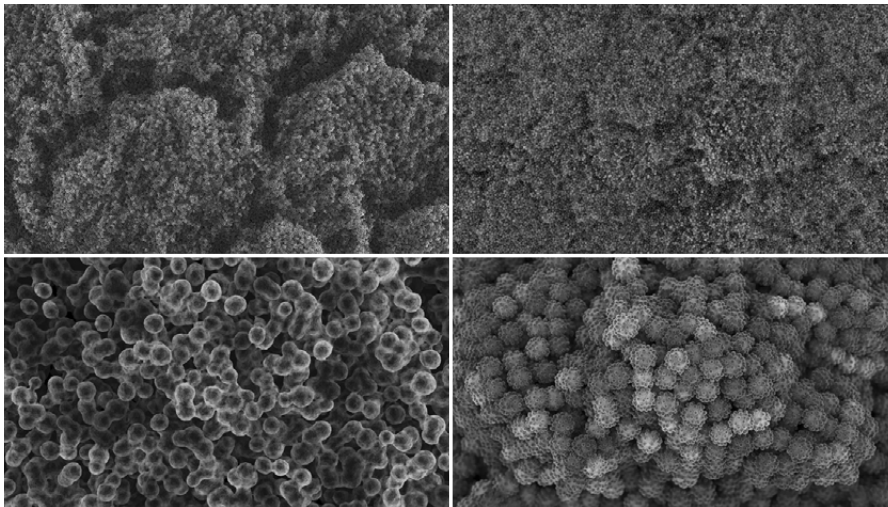
ART³ Filler System

SimpliShade Bulk Fill features an enhanced version of the Adaptive Response Technology found in Harmonize[™] and SimpliShade Universal Composite, ART³.

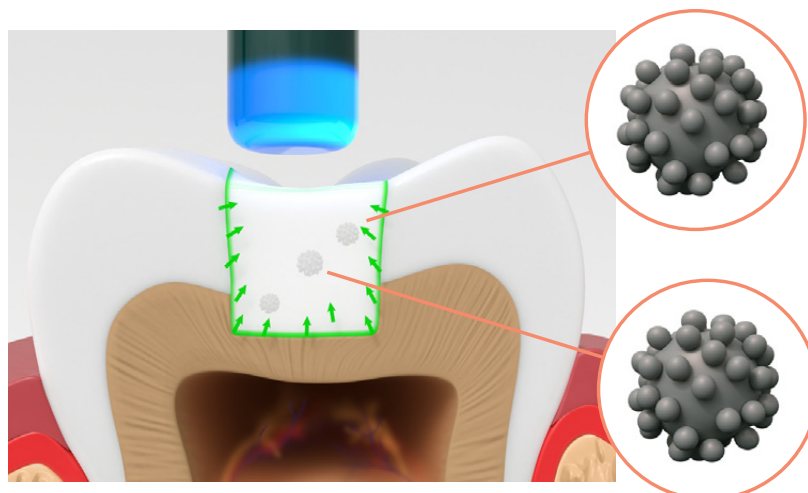
- **Adaptive rheological response technology** enabled by rheological modifiers: when the composite is at rest, the rheological modifiers facilitate the formation of a network structure which effectively raises the viscosity of the composite and makes it more stackable. As the composite is subjected to a shear force when being manipulated, the network gets disrupted and broken, resulting in a significant reduction in composite viscosity and making it much easier to shape, create the anatomy, or feather it out at the margin. Once the sculpting/shaping is completed (i.e., the shear force is removed), the network reestablishes and the composite viscosity recovers, making the composite non-slumping and allowing a rather stable anatomy before light-curing. This would reduce the need to rework, or rebuild the anatomy, and therefore save valuable chair time.



- **Adaptive color-blending response technology** is powered by an innovative nanofiller architecture. The nanofiller architecture employed mimics the nature of the enamel structure. Enamel is comprised of enamel prisms (diameter: $\sim 5 \mu\text{m}$) with each prism containing thousands of hydroxyapatite nano-crystals (size: $\sim 50\text{nm}$ or about 1/100 the diameter of the prism). The nanofiller architecture used in SimpliShade Bulk Fill is built similarly in that it is comprised of nanofiller assemblies (diameter: $\sim 3 \mu\text{m}$) with each containing thousands of nanomers (size: $\sim 30\text{nm}$ or about 1/100 the diameter of the nanofiller assembly). Because of the similar size and size ratio between the enamel structure and the SimpliShade Bulk Fill filler architecture, the SimpliShade Bulk Fill composite mimics the enamel in how it interacts (transmits, reflects, and scatters) with light. As a result, the enamel and the composite perfectly blend in color and appearance, making them virtually indistinguishable from each other (chameleon effect).



- **Adaptive shrinkage stress response technology** during the polymerization of the composite: besides the low shrinkage resin matrix employed in SimpliShade Bulk Fill, there are two additional innovative design features incorporated into the nanofiller architecture that further reduce the shrinkage stress during polymerization. First, the resin-infused nanofiller assembly enhances its elastic property and therefore its stress-buffering capability. Secondly, the nanofiller assembly is covered with a special coating which has the capacity to relieve the interfacial stress between the filler and resin matrix during curing. The above three shrinkage stress reduction mechanisms synergistically work together to reduce the stress that the composite restoration exerts on the adhesive layer, therefore enhancing the marginal adaptation and integrity.



Bulk Fill Flow Benefits

FEATURES	BENEFITS
Ternary Adaptive Response Technology	<ul style="list-style-type: none"> • Easy to dispense and manipulate during placement • Color blending to mimic enamel • Shrinkage stress response to relieve stress
High Radiopacity	Easy to reference on a radiograph
One Universal Shade	Less time spent having to shade match + manage inventory
Self-Leveling	Flows into the margins for easy adaptability
Bulk Fill	Simplified placement application

Composition

SimpliShade Bulk Fill composite is radiopaque with about 250% aluminum (100% aluminum has a radio-opacity equivalent to that of dentine and 200% aluminum is equivalent to enamel).

The glass fillers are comprised of chemically infused mixed oxides, pre-polymerized filler, barium glass filler, silica, and ytterbium trifluoride (total filler loading of about 82.5% by weight or 66% by volume).

The inorganic filler content is up to 75% by weight or 55% by volume. SimpliShade Bulk Fill has a primary particle size range of 40 nm to 0.4µm. The product contains Bis-EMA, Bis-GMA, UDMA, and TEGDMA resins.

None of the ingredients contain pharmacologically active components.

Inorganic Filler Summary

Fill Ratio by Weight	~82.5%
Fill Ratio by Volume	66%
Smallest Primary Particle Size	
Largest Primary Particle Size	
Average Particle Size	

Organic Resin System

SimpliShade Bulk Fill contains the following resin components:

- BisGMA – Provides strength
- UDMA
- BisEMA – Controls volumetric shrinkage
- TEGDMA – Provides viscosity control

Simplishade Bulk Fill Flow Physical Characteristics

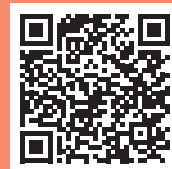
Volumetric Shrinkage (%)	1.61
Flexural Strength (MPa)	129
Fracture Toughness (MPa *m ^{1/2})	
Compressive Strength (MPa)	406
Flexural Modulus (GPa)	10,722
Diametral Tensile Strength (MPa)	58
Depth of cure (mm):	≤5.0
Shrinkage Stress (2 min, halogen light) (MPa)	3.13
Wear Rate (cm ³ /cyc x10 ⁻⁹)	6.68
Radiopacity (%Al)	301

Indications for Use

SimpliShade Bulk Fill is indicated for direct placement of anterior and posterior restorations, core build-ups, and repair of defects in restorations.



**For an ultra
high shine finish,
use Kerr's line
of Polishers!**



**One Shade.
One Step.
A Better Way
to Bulk Fill.**

For more information scan the QR Code or visit
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