

**belleGlass™ NG.** The next generation.



- Natural look.
- Natural wear.
- High performance.
- Long-lasting smooth polish.
- Proven history.

# Proven history.

Whether a dentist, a dental technician, or a patient, your needs are the same. You want a durable restoration that performs well both functionally and esthetically. The "next generation" of indirect composites, belleGlass™ NG, incorporates advanced nanoparticle and submicron filler technology to create the most significant development in composite in the last ten years, surpassing previous belleGlass benchmarks and setting new industry standards for polish, shine and wear.

The belleGlass name started earning its outstanding reputation when introduced to labs as belleGlass HP in 1996. With the same proven formulas from belleGlass HP and Point 4™ plus the latest nanoparticle and submicron filler technology offered in Premise™, belleGlass NG produces a natural opalescent look with superior strength and wear characteristics.



# Proven science.

## Nano-Hybrid Technology

**Prepolymerized Filler (PPF)** – PPF is pre-cured resin milled to a particle size of 25 microns made from our proprietary blend of resin, barium glass and discrete nanofiller.

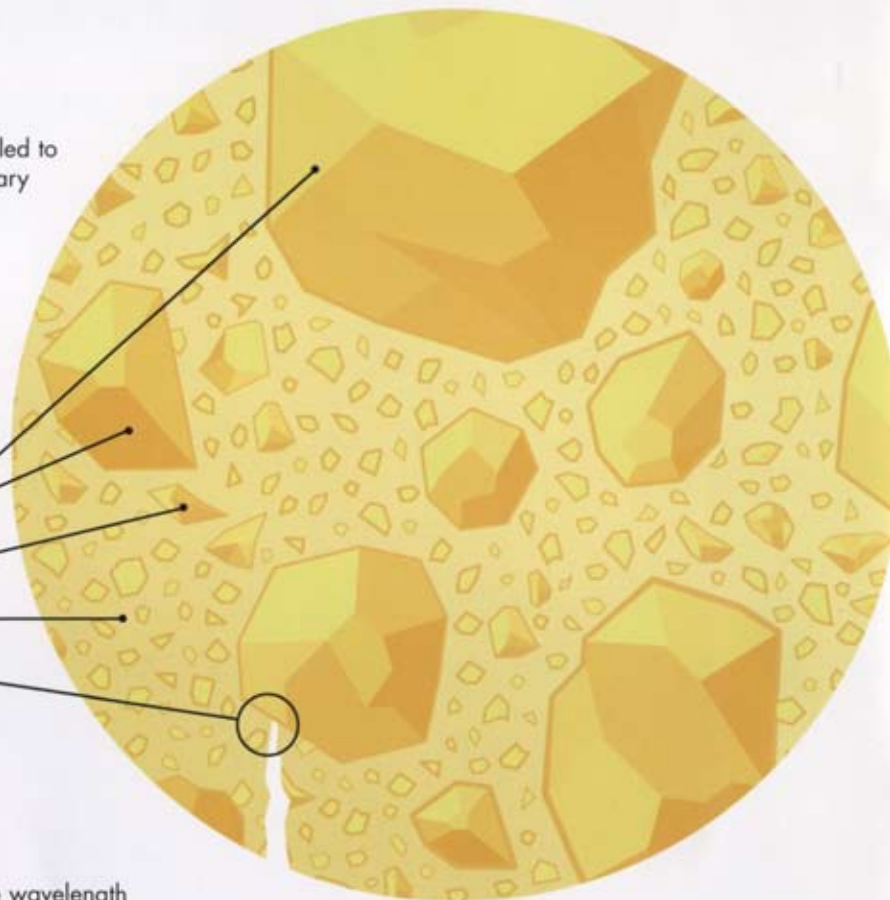
**Trimodal Filler Distribution** – The combination of large PPF particles, 0.4 $\mu$  structural filler and small discrete silica nanoparticles allows higher filler loading, improved physical properties, optimal handling, higher surface gloss and reduced polymerization shrinkage.

Prepolymerized Filler

Point 4 Filler

Silica Nanoparticles

Composites with PPF particles are stronger because PPF particles inhibit the propagation of cracks by blunting.



## High Gloss Retention

The particle size of fillers in PPF particles is below the wavelength of visible light and light-scattering effects are minimal. Plucking of PPF particles is reduced because mechanical properties are more similar to the cured paste rather than ceramic particles.

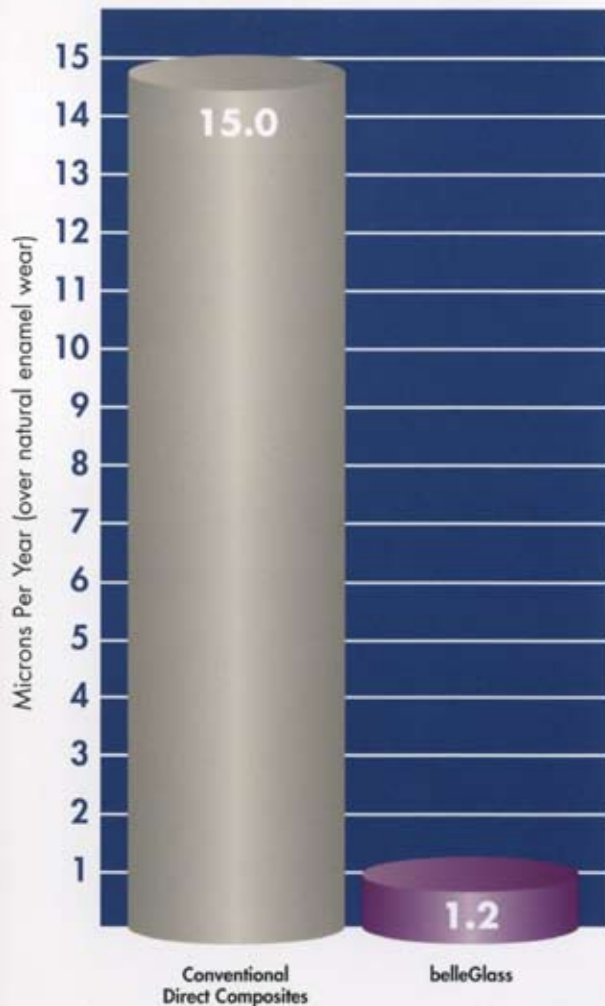
Cured traditional composites wear unevenly and leave microscopic voids or "plucking" that causes a loss of luster and gloss.

In cured belleGlass NG, the PPF particles wear more uniformly with the resin matrix. Wear resistance is improved and the surface remains smoother and glossier with time.



# Proven longevity.

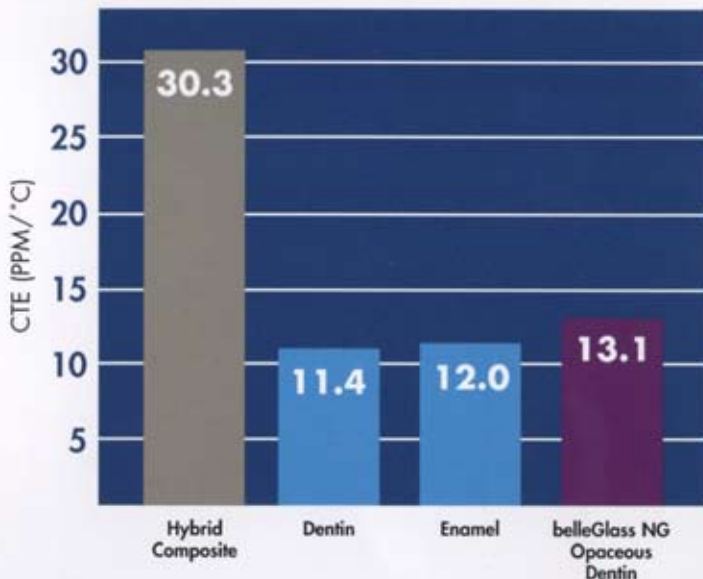
## Clinical Restoration Wear Rates



In-vivo measurements of wear over a five-year period showed belleGlass to average only a little over 1.2 microns a year – closer to the wear rate of natural teeth than any other material tested.

- S. Suzuki and C.F. Cox: 5-Year Study, UAB Internal Report to Kerr Corp., Feb. 29, 1996.  
- D.A. Givan, S.J. O'Neal and S. Suzuki: 8-Year Study, J. Dent. Res. V.79 Special Issue Abst. #1523, April 2000.

## Coefficient of Thermal Expansion



belleGlass NG Opaceous Dentin more closely matches the coefficient of thermal expansion (CTE) of natural dentin. This means belleGlass NG will look and act virtually the same as the natural tooth structure.



Case courtesy of Dr. Robert Rifkin



Typical wear to natural dentin in occlusion with porcelain restorations. Porcelain is five times harder than belleGlass NG (per Vickers Hardness Rating – composites score 60 to 175 and porcelain scores 600 to 700).

# Proven clinical performance.



Case courtesy of Dr. Michael DiTolla



Case courtesy of Dr. William Dickerson



Case courtesy of Dr. Michael DiTolla



Case courtesy of Dr. Douglas Terry

- **Natural look.** The opalescent appearance more closely replicates natural enamel like no other composite-based material. With two bleaching shades (B0 and B00) and a complete range of Vita\*\* classical shades, you can perfectly match the esthetic needs of every patient.
- **Natural wear.** belleGlass NG restorations closely match natural dentition in wear characteristics.
- **High performance.** Trimodal curing (light, heat and pressure) achieves over 98% material conversion, as compared with 60 – 70% achieved with light-cure-only materials.
- **Long-lasting smooth polish.** The unique blend of 25 $\mu$  prepolymerized filler, 50 nm nanoparticles, and 0.4 $\mu$  submicron hybrid fillers is a breakthrough of science and innovation. Particle sizes are below the wavelength of visible light, improving wear and delivering a surface that becomes smoother and shinier with time.
- **Proven history.** Rated #1 indirect resin system five years in a row by Reality Publishing, rated #1 by Dental Advisor, ten years of positive clinical studies and field data, and tens of thousands of successful restorations placed since 1996.

\* Vita is a registered trademark of Vita Zahnfabrik Company, Germany.

# *belleGlass*<sup>TM</sup> NG

## belleGlass™ NG Physical Characteristics

### Compressive Strength

Opaceous Dentin	460 MPa
Enamel/Translucent Dentin	515/449 MPa

### Flexural Strength

Opaceous Dentin	158 MPa
Enamel/Translucent Dentin	153/154 MPa

### Diametral Tensile Strength

Opaceous Dentin	63 MPa
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### Flexural Modulus

Opaceous Dentin	13,100 MPa
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### Etchable with HF

Yes

### Method of Cure

Light, Heat and Pressure

### Material Conversion

98.5%

### Coefficient of Thermal Expansion

Opaceous Dentin	13.1ppm/°C
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### Shrinkage

Opaceous Dentin	Less than 0.94%
Enamel/Translucent Dentin	Less than 2.34%

### Filler Volume

Opaceous Dentin	Up to 87%
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"The belleGlass NG indirect restorative system is clinically unique for a number of reasons. First, it is extremely wear resistant as determined in a controlled clinical study over an eight-year period. Second, belleGlass NG is characterized as highly esthetic and in fact, is indistinguishable from porcelain. Its outstanding clinical performance can in part be attributed to the curing process that includes the use of an inert atmosphere during polymerization."

– Karl Leinfelder, DDS, MS  
Chapel Hill, NC

"The belleGlass indirect resin system provides the technician and clinician alternative choices for different clinical situations. With proper laboratory procedures this composite material provides strength and homogeneity, excellent esthetics with enhanced optical properties and, most important, a superior resistance to wear."

– Chuck Maragos, CDT  
St. Paul, MN



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