

## DESCRIPTION

OptiShade is a highly-filled nanohybrid universal composite that Kerr developed to simplify inventory management and save clinicians time on shade selection, while providing premium handling qualities and highly esthetic restorations.

It features low shrinkage, strength and durability for posterior restorations and outstanding color match, polishability, gloss retention and blending (“chameleon effect”) for anterior restorations.

The filler proportions and morphology contribute to ideal handling characteristics, also aided by a rheological modifier that provides an enhanced thixotropic effect when sculpting. OptiShade is available in three composite shades (Light, Medium, Dark) and two special shades (Bleach White and Universal Opaque). The special shades will be minimally used in extreme restorative cases: the Bleach White can be used in very white or bleached teeth; while the Universal Opaque would be used as the first increment (0.5 - 1.0 mm thick) for blocking discoloration or masking staining and then be covered with one of the three main shades.

## INORGANIC FILLER SYSTEM

The primary filler in OptiShade is composed of spherical silica and zirconia particles formed from a molecular suspension. This manufacturing method permits precise control over the size and shape of the system components.

In addition to the nanoscale filler, OptiShade also contains 400 nanometer barium glass particles. This gives OptiShade an effective particle range of 5 - 400 nanometers. This combination helps provide strength, polishability, radiopacity, wear resistance and ideal viscosity and handling.

## A.R.T. FILLER SYSTEM

OptiShade features Adaptive Response Technology (ART), also found in Harmonize™ - elements of the filler system which have two components. First, the zirconia and silica nano-particles are in an arrangement that imparts special optical properties.

More specifically, it permits light diffusion characteristics that are like human enamel. Enamel tends to reflect

or transmit more diffuse light at shorter wavelengths (i.e. - blue) and more collimated or specular reflection/transmission at longer wavelengths (i.e. - red). The zirconia/silica nano-particles work together to mimic this characteristic, which provides better restoration blending, commonly known as the “chameleon effect”. In this sense, OptiShade adapts to the light wavelength to improve the esthetic outcome - a feature completely unique to this material.

The second component of the ART filler system is a rheological modifier, which acts as a stabilizing network if left undisturbed. Under this condition, the apparent viscosity of the material is higher, which prevents material creep, commonly known as “slump”.

If any energy source is applied to the composite material, such as that from a sculpting instrument, the attractive forces that create the stabilizing network are temporarily broken, and the apparent viscosity is reduced. This makes the material softer and easier to carve, yet it remains non-sticky due to the high proportion of filler to resin. In this sense, the filler system is adaptive to the action of the operator, helping to eliminate some of the typical challenges associated with defining and maintaining proper restoration anatomy.

## INORGANIC FILLER SUMMARY

Fill ratio by weight	~81%
Fill ratio by volume	~64.5%
Smallest primary particle size	~5 nanometers
Largest primary particle size	~400 nanometers
Average particle size	~50 nanometers

## ORGANIC RESIN SYSTEM

OptiShade contains the following resin components  
BisGMA - Provides strength  
BisEMA - Controls volumetric shrinkage  
TEGDMA - Provides viscosity control

## SHADE GUIDE CHART

Composite Shades	VITA® Shade Guide Equivalent
Light - LT	A1, B1, B2, C1, D2
Medium - MD	A2, A3, C2, D3, D4
Dark - DK	A3.5, A4, B3, B4, C3, C4

## OPTISHADE PHYSICAL CHARACTERISTICS

Volumetric Shrinkage (%)	1.96
Flexural Strength (MPa)	140
Fracture Toughness (MPa *m <sup>1/2</sup> )	1.41
Compressive Strength (MPa)	366
Flexural Modulus (GPa)	14.1
Diametral Tensile Strength (MPa)	56
Polishability (gloss units)	79
Gloss Retention (gloss units)	73
Radiopacity (%Al)	~290
<b>Maximum Incremental Layer Thickness</b> (mm)	
Light, Medium, and Bleach White Shades	2.0
Dark Shade	2.0
Universal Opaque	1.5
<b>Recommended Curing Time</b> (seconds) Optilux™ (or light with output 650 - 1000 mW/cm <sup>2</sup> )	
Light, Medium, and Bleach White Shades	20
Dark Shade	40
Universal Opaque	40
<b>Recommended Curing Time</b> (seconds) Demi™ Ultra / Demi™ Plus (or light with output >1000 mW/cm <sup>2</sup> )	
Light, Medium, and Bleach White Shades	10
Dark Shade	20
Universal Opaque	20

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