

UNIVERSAL SUBMICRON HYBRID COMPOSITE

BRILLIANT EverGlow™

Product Guideline



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BRILLIANT EverGlow

THE GLOW OF THE ART

BRILLIANT EverGlow is a stackable Universal Submicron Hybrid Composite that allows for high aesthetic restorations with a reduced spectrum of shades. It is a true all-round material which fully meets highest requirements for anterior and posterior restorations, offering simple handling, excellent blend-in properties and long-lasting brilliance.

FEATURES AT A GLANCE

- Exceptional Polishability
- Long-lasting brilliance
- Aesthetic single-shade restorations
- Smooth consistency
- Good wettability on the tooth surface for effortless adaptation and modelling

BRILLIANT EverGlow contains antibacterial zinc oxide

(see Atmara, S., Gül, K. & Cicek, R., 1997, S. 595-597, Phadmavathy, N. & Vijayaraghavan, R., 2008)

INDICATIONS

BRILLIANT EverGlow is applied in the 2 mm increment technique and is indicated for:

- Direct restorations of all cavity classes
- Luting and repair of composite and ceramic restorations



SHADE SPECTRUM

The BRILLIANT EverGlow line comprises 7 universal, 2 translucent and 3 opaque shades. They integrate so well into the existing surroundings, that one shade covers two VITA shades at a time, resulting in A1/B1 or A2/B2, for example.

Universal shades:

Can be applied separately or in combination with opaque and/or translucent shades.

Translucent shades:

Can be applied separately or following the universal shade as a coating layer.

Opaque shades:

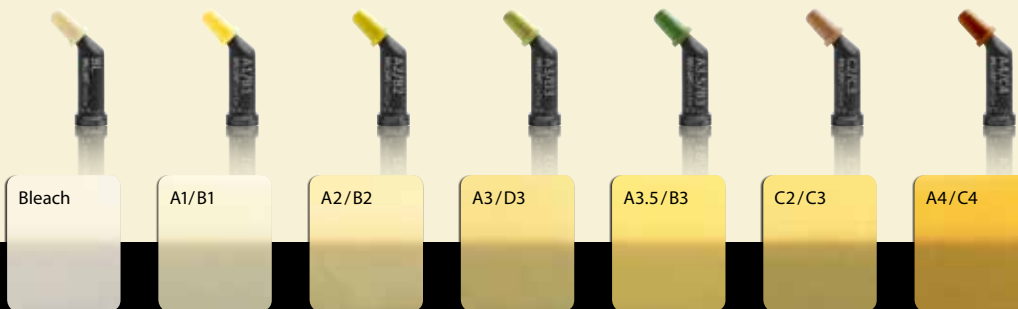
The masking ability is controlled by the thickness of the layer. To achieve an optimal blend-in effect, it is suggested to keep the total opaque shade layer thickness as small as possible and to cover it with universal shades.

For further information on colour management, please see "Frequently Asked Questions 7-11".

HOW CLEVER!
7 basic colours
is all you need.

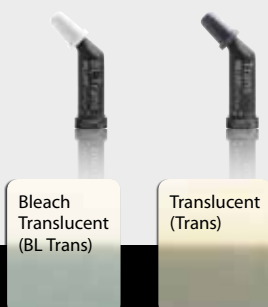
UNIVERSAL

- aesthetic single tooth restoration
- anterior and posterior



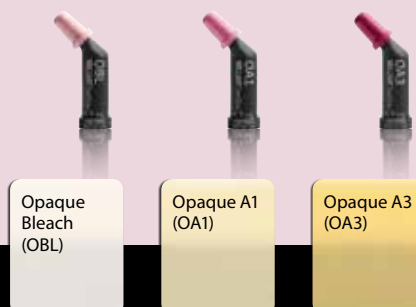
TRANSLUCENT

- shape and colour corrections to enhance individual aesthetics
- reconstruction of incisal edges



OPAQUE

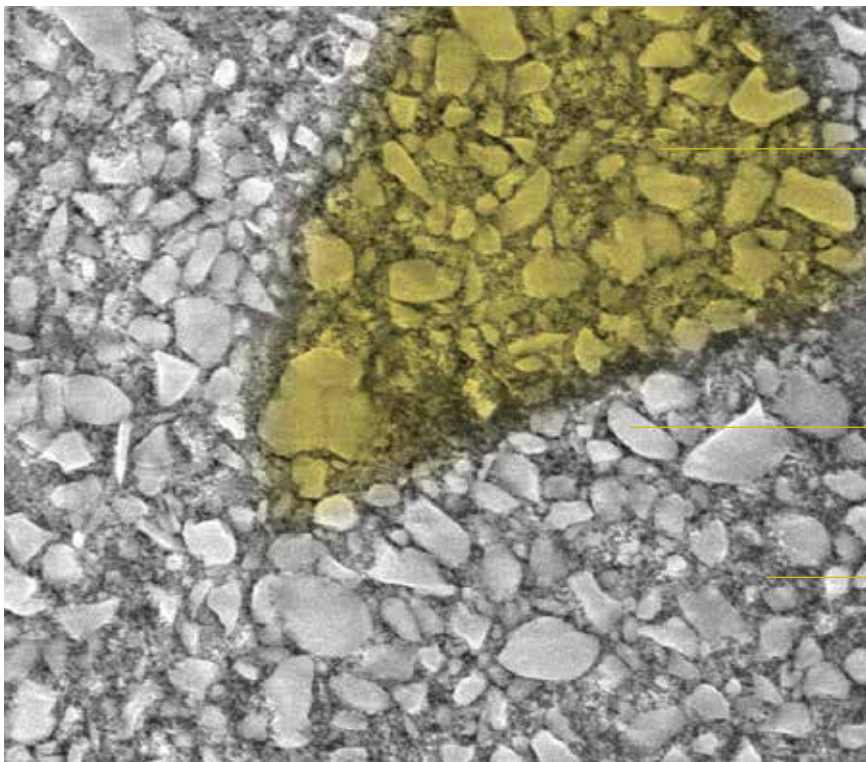
- masking dark spots
- level out chroma differences



FILLER TECHNOLOGY

BRILLIANT EverGlow IS A SUBMICRON HYBRID COMPOSITE OF THE LATEST GENERATION.

The average particle size of the dental glass filler has been reduced to below 1 micron to achieve maximum ease of polishability and gloss retention. This was also accomplished by the composition of the pre-polymerised fillers corresponding to the composition of the composite itself. Further, the fillers' anchoring has been further optimised to prevent plucking. The formulation has been adjusted without compromising neither the good handling characteristics of the composite paste nor the mechanical strength of the cured composite.



Pre-polymerised filler containing dental glass and nanosilica

Dental glass submicron

Nanosilica aggregated and non-aggregated

SEM picture of BRILLIANT EverGlow after toothbrush abrasion
Source: Internal data

TECHNICAL DATA

Criteria	Unit	Method	Value*
Filler content by weight	w-%	-	79
Filler content by volume	vol-%	-	64
Inorganic filler content by weight	w-%	-	74
Inorganic filler content by volume	vol-%	-	56
Range of inorganic filler size	nm	-	20-1'500
Flexural modulus	MPa	ISO 4049	8200
Flexural strength	MPa	ISO 4049	117
Compressive strength	MPa	internal method	390
Vickers hardness	kg/mm ²	internal method	55
Wear rate McCabe	-	internal method	2.2
Gloss retention after toothbrush abrasion	GU	internal method	67
Water sorption	µg/mm ³	ISO 4049	15.1
Water solubility	µg/mm ³	ISO 4049	<1
Polymerisation shrinkage Watts	%	internal method	2.3
Polymerisation shrinkage Archimedes	%	ISO 17304	2.8
Consistency Zwick	N	internal method	18.0
Stickiness to steel	N	internal method	41
Polymerisation depth	mm	ISO 4049	2.4
Radio opacity	mmAl	ISO 4049	2.0
Operating light resistance 60s@10'000lx	-	ISO 4049	pass
Operating light resistance @20'000lx	s	ISO 4049	50
Opalescence	-	internal method	21.0
Colour stability UV, delta E	-	internal method	0.76

Source: Internal data

*) Universal, translucent and opaque shades are identical in filler and resin composition. Therefore technical data are identical with the exception of optically influenced parameters such as depth of cure or operating light resistance. The data above are typical data as measured on the universal shade A2/B2.

POLISHABILITY

Method:

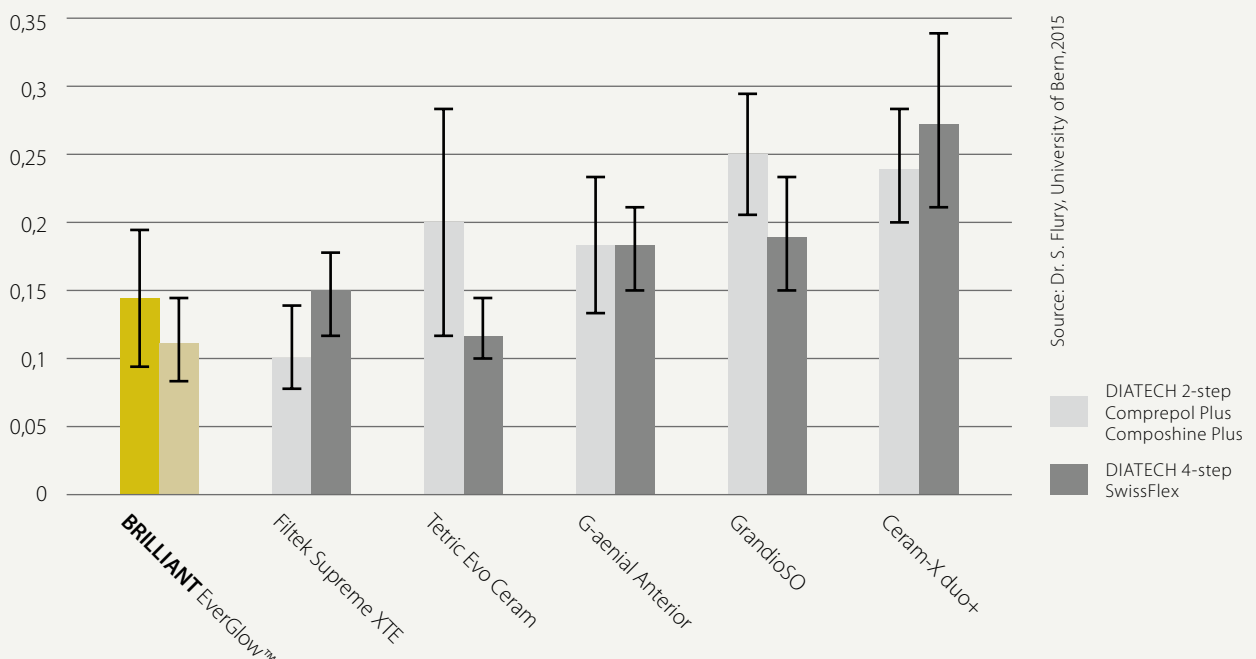
In this in vitro study, the surface roughness of 6 different composites was compared after polishing. Two polishing systems were used: the 4-step DIATECH SwissFlex discs and the 2-step DIATECH Comprep Plus/Composhine Plus rubber points.

Composite enamel shade A3 or equivalents were used. Standard specimen were prepared in acrylic moulds, light cured and ground to a baseline surface roughness with SiC 220 grit paper. Then 20 specimen per composite were polished with both of the polishing systems mentioned above (10s/step). Surface roughness Ra and Rs of each specimen was determined with a Mahr Perthometer S2 under 0°, 45° and 90° angle and averaged.

Conclusion:

BRILLIANT EverGlow and Filtek Supreme XTE show the lowest surface roughness after polishing. Low roughness means the composite is easy to polish and it shows a high gloss. The 2 polishing systems lead to a comparable roughness level, but the polish quality with the 4-step SwissFlex discs is slightly more uniform.

ROUGHNESS R_a AFTER POLISHING / μm



GLOSS RETENTION

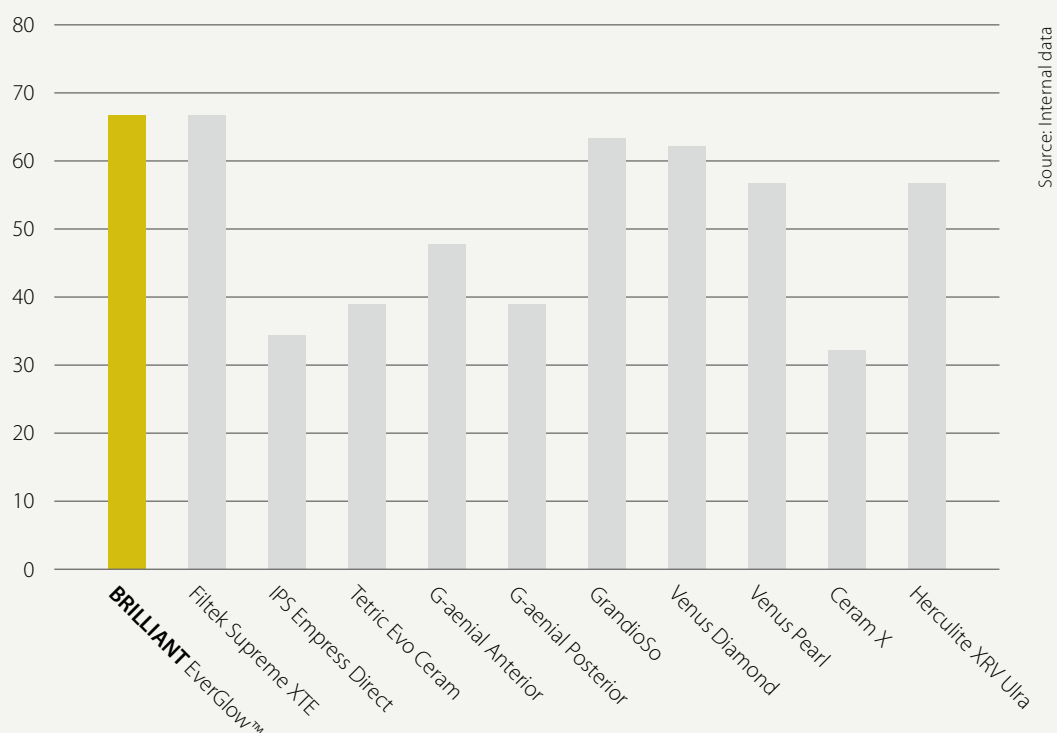
Method:

To measure gloss retention, a tooth brushing simulator was used allowing the testing of large numbers of samples. Samples were pressed and the surface layer ground off. The samples were mechanically polished with a Bühler EcoMet- Automet polisher and a diamond slurry to at least 95GU. They were then brushed according to a standardised tooth brushing procedure* (toothbrush Curaprox ultra soft 5460, tooth paste slurry with Elmex caries protection RDA75, loading 3.2N, 6000 cycles, zig zag). Finally residual gloss was analysed with a Zehntner Gloss meter*.

Conclusion:

BRILLIANT EverGlow ranks among the composites with the best gloss retention. This means the good polish of a BRILLIANT EverGlow restoration will be preserved over a longer time compared to restorations carried out with some other composites.

GLOSS AFTER TOOTH BRUSHING TEST / GLOSS UNITS



Source: Internal data

ROUGHNESS AFTER TOOTHBRUSH ABRASION

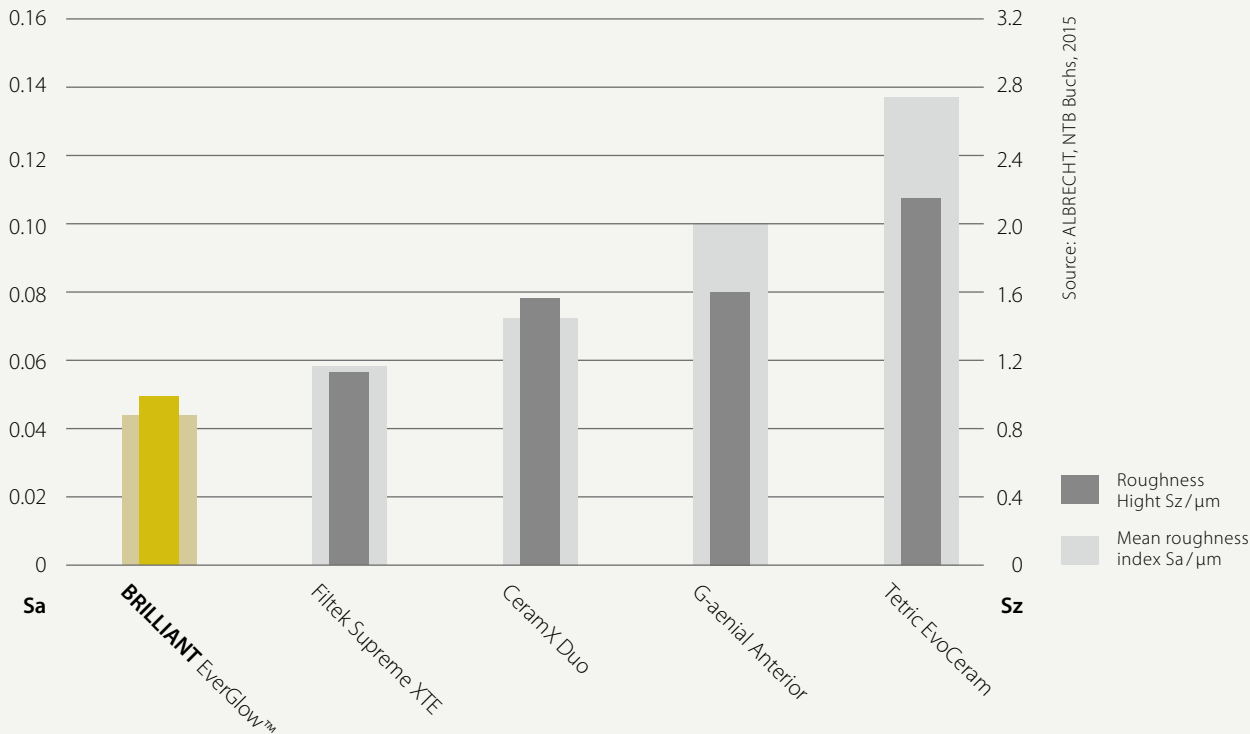
Method:

Surface roughness of current universal composites after a tooth brushing simulation were compared. Samples were pressed in a mould and the surface layer was ground off. The samples were mechanically polished with a Bühler EcoMet- Automet Polisher and a diamond slurry to at least 95 GU. The samples were then abraded in a tooth brushing simulator according to a standardized procedure* (toothbrush Curaprox ultra soft 5460, tooth paste slurry with Elmex caries protection RDA75, loading 3.2N, 6000cycles, zig zag) and finally analyzed with white light interferometry.

Conclusion:

Among the tested samples, BRILLIANT EverGlow shows the lowest roughness after tooth brush abrasion.

SURFACE ROUGHNESS AFTER TOOTH BRUSHING / μm



COMPRESSIVE STRENGTH

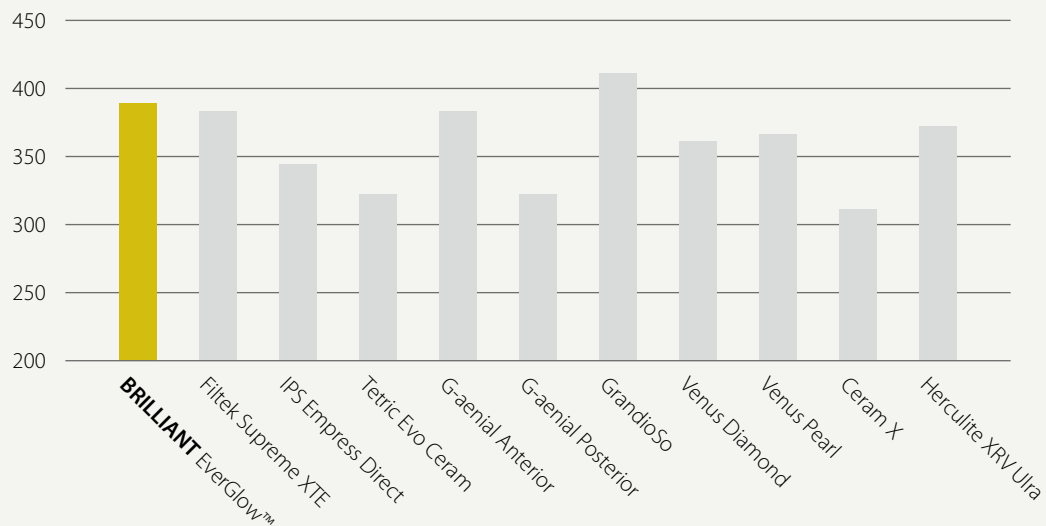
Method:

The composites were pressed into cylindrical steel moulds, Ø 4 mm, h: 6 mm and light cured 60 s from each side. Cylinders were demoulded and stored in deionised water at 37°C, 24 h before loading to compressive failure with the tensile testing machine*.

Conclusion:

BRILLIANT EverGlow shows a high compressive strength. It ranks in the follower group to the best performing GrandioSo. Compressive strength gives an indication of how well a composite performs under a very high single load as encountered when unexpectedly biting on a hard object.

COMPRESSIVE STRENGTH / MPa



Source: Internal data

STICKINESS OF THE COMPOSITE PASTE

Method:

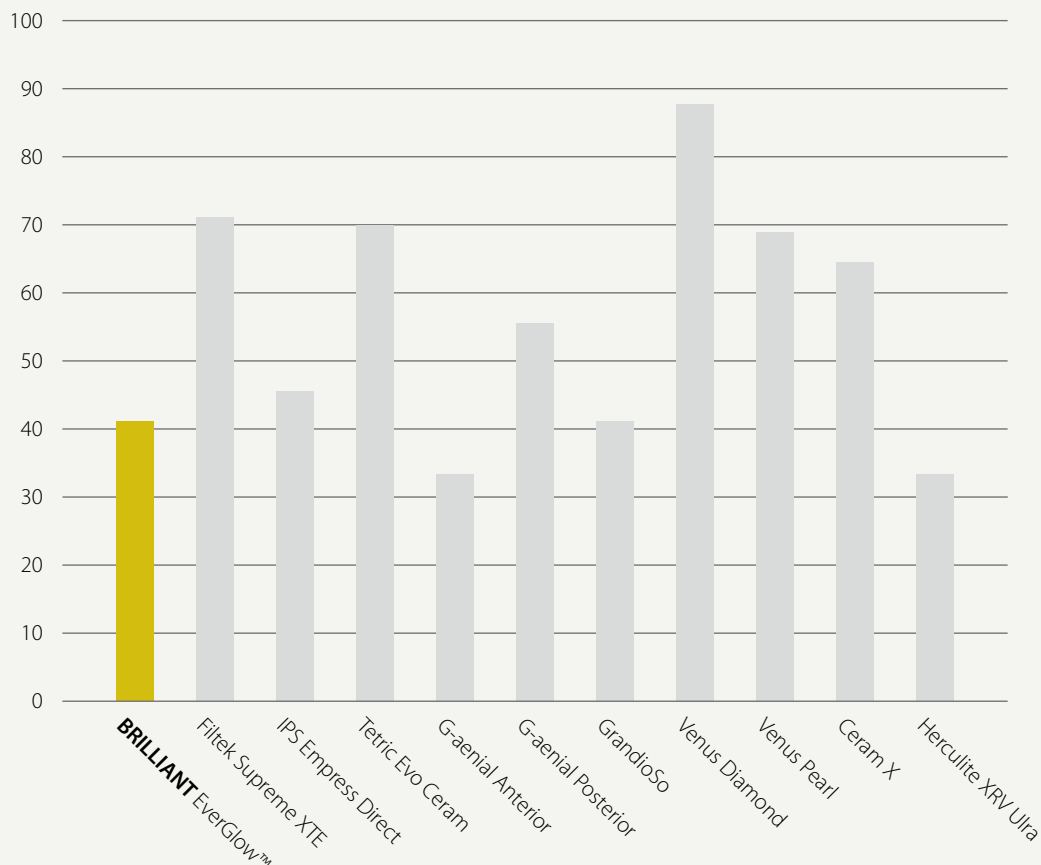
For testing, a polished stainless steel rod was pushed onto the composite surface and pulled away quickly. The maximum pull off force is considered a good equivalent for perceived stickiness*.

It was found that the various CVD surface coatings (TiC-silver, TiN-gold, AlTiN-black) of the instruments have minimum influence on the stickiness.

Conclusion:

To allow easy sculpting, it is essential for the material not to stick to the instrument. BRILLIANT EverGlow ranks among the composites with the least stickiness to the tested instrument surfaces.

STICKINESS OF THE COMPOSITE PASTE / N



WEAR

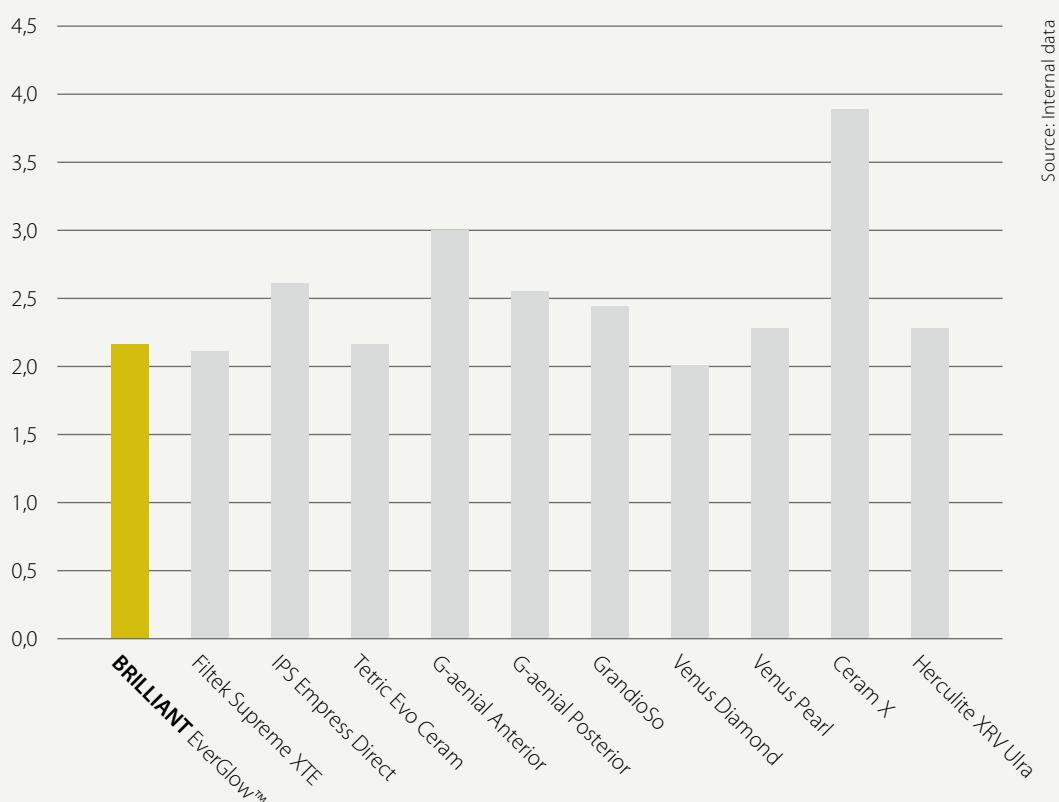
Method:

To assess the material loss by abrasion, a method described by McCabe was applied. Composite was pressed into cylinders Ø 5 mm, h: 6.7 mm, and light cured for 60 s from each side. After an additional 90 s in the light furnace, cylinders were stored in deionised water at 37 °C for 7 days. A cylinder was placed in an abrasive paper (SiC P800) coated vial and agitated by a flask shaker with 800 osc/min for 480 min. Weight loss was measured and wear rate relative to an amalgam standard was calculated*.

Conclusion:

BRILLIANT EverGlow ranks among the composites with the lowest material loss by abrasion.

WEAR RATE (McCabe)



Source: Internal data

BOND STRENGTH

Method:

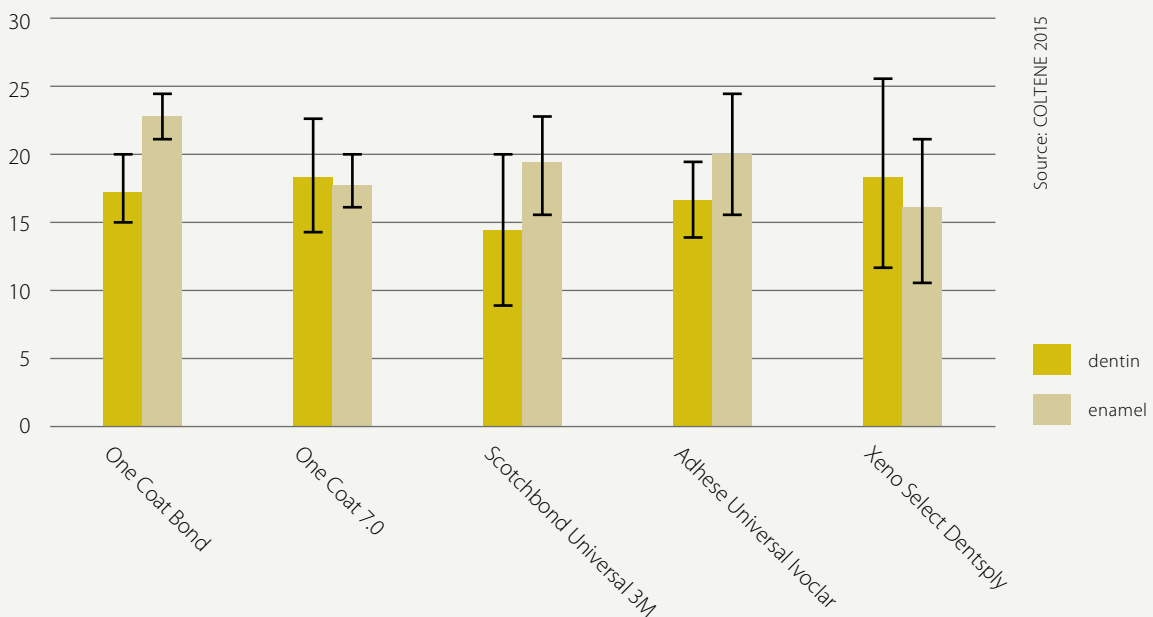
BRILLIANT EverGlow's compatibility with bonding systems has been tested with shear bond strength measurements using the Watanabe method*.

- Substrate: human teeth ground for dentin, bovine teeth pumiced and etched for enamel
- Adhesive applied according to IFU
- Composite applied in 3 layers
- Composite light cured according to IFU
- Specimen were stored in deionised water at 37 °C for 24 h before testing.

Conclusion:

BRILLIANT EverGlow is compatible with the adhesives tested, as values ≥ 15 N are considered as good. The standard deviation is an indicator for the technique sensitivity of each bonding system.

SHEAR BOND STRENGTH / MPa



ANTIBACTERIAL PROPERTIES

Method:

The test was conducted at Quality Labs BT GmbH, Nürnberg*) according to Quality Labs SOP3.2 from 2008-08-05 „Essay zur Bestimmung antimikrobieller Wirksamkeit von Werkstoffoberflächen gegen Staphylococcus epidermidis DSM 18857“.

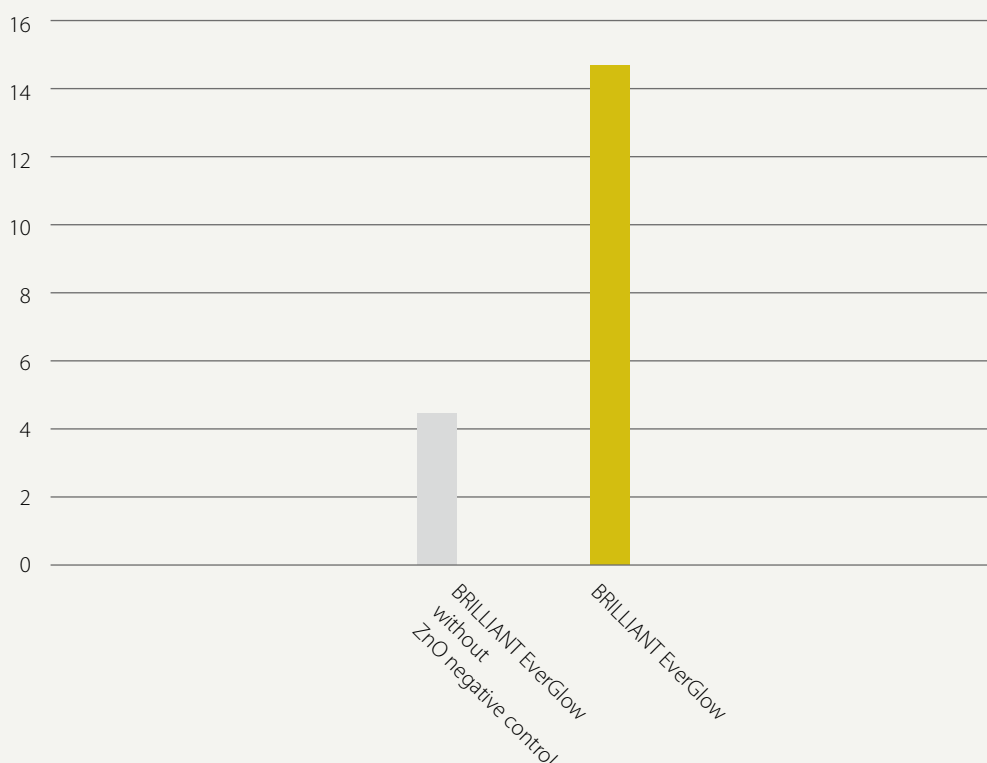
Cylindrical cured composite specimens were incubated with cells of the testing stem. Non-adhering cell material was washed off.

The composite was challenged to inhibit the proliferation of the bacteria on its surface over a period of 18 h at 37 °C. If the inhibition was not complete, living daughter cells were released to the testing medium. The testing medium was cultivated and observed over 48 h and the onset of a critical perturbation in the medium was recorded. The higher the antimicrobial efficiency of the composite the later the onset. A material causing a delay of > 6 h over a relevant control specimen is defined to be antimicrobial. When a material shows antimicrobial properties against staphylococcus epidermidis as tested, it is safe to conclude that the material has similar antimicrobial properties against other Gram-positive bacteria as streptococcus mutans.

Conclusion:

The test shows a significant delay of the onset time of about 10 h over the negative control. Under the limitations of this testing procedure BRILLIANT EverGlow containing ZnO shows antimicrobial properties.

PROLIFERATION INHIBITION TIME / h



Source: Quality Labs BT GmbH, Nürnberg

*) Quality Labs BT GmbH is certified by:
· DAkkS, Deutsche Akkreditierungsstelle D-PL-13335-01-00
· SLG, Zentralstelle der Länder für Gesundheitsschutz bei Medizinprodukten, SLG-AP-231.10.72

QUESTIONS AND ANSWERS

1. What is BRILLIANT EverGlow?

BRILLIANT EverGlow is a universal composite based on submicron hybrid filler technology. It is indicated for permanent direct restorations of all cavity classes and available in tips and syringes.

2. What makes the new submicron filler technology so special? How does it distinguish from other composites on the market?

BRILLIANT EverGlow shows an outstanding polishability and gloss retention. The key to its performance lies in the submicron filler technology: the recipe comprises, on the one hand, very small (submicron) barium glass fillers, and on the other hand, pre-polymerised fillers that perfectly match the composite. On top, an optimum surface treatment leads to an optimised compound strength. This results in a composite with excellent abrasion resistance and a long-lasting glossy surface.

3. Why does BRILLIANT EverGlow contain pre-polymerised fillers?

They ensure:

- Low polymerisation shrinkage
- Reduced stickiness to the instrument
- Good sculptability

4. Which clinical situations is BRILLIANT EverGlow indicated for?

As a universal composite, BRILLIANT EverGlow is indicated for all cavity classes and due to a high gloss retention especially suitable for front restorations. It is applied in the 2 mm increment technique. Further it is used to lute and repair composite and ceramic restorations.

5. What is the reason for BRILLIANT EverGlow's effortless polishability?

It is thanks to the submicron fillers, that leave the restoration with a very homogenous and smooth surface.

6. How does BRILLIANT EverGlow achieve such a high gloss retention?

Thanks to:

- Very small (submicron) barium glass fillers
- Pre-polymerised fillers with the same composition as the composite itself
- An optimum silanisation of the filler compound to reduce chipping

7. How many degrees of translucency does the BRILLIANT EverGlow shade spectrum cover?

All in all, the system encompasses the following 3 translucencies:

- Opaque shades (≈ 13 % of translucency)
- Universal shades (≈ 21 % of translucency)
- Translucent shades (≈ 27 % of translucency)

Also see "How should I apply the BRILLIANT EverGlow shade spectrum to achieve optimum aesthetics?"

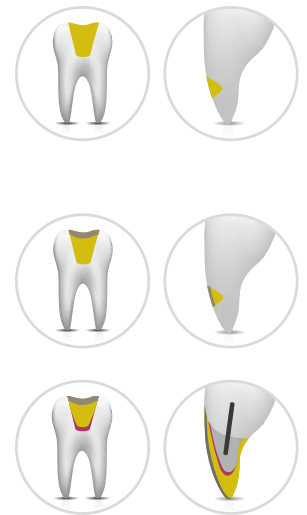
8. How should I apply the BRILLIANT EverGlow shade spectrum to achieve optimum aesthetics?

The sophisticated shading system of BRILLIANT EverGlow allows for maximum flexibility in the dental practice.

With only 7 universal shades, (≈ 21 % of translucency) high aesthetic anterior – and posterior restorations are realised. Compared to established competitor composites, the COLTENE colour system is one step ahead: the pioneered and through the years further perfected „Duo Shade“ system allows, thanks to excellent blend- in properties, to cover two VITA shades with only one universal shade, resulting in A1/B1 or A2/B2, for example.

Voluntarily applied on top, 2 additional translucent shades (≈ 27 % of translucency) allow for shape and colour corrections to enhance the individual aesthetics and the reconstruction of incisal edges.

Additionally, 3 opaque shades (≈ 13 % of translucency) were developed to carry out aesthetic corrections (e.g. chroma deviations) as a base material, to mask dark areas and or to form a dentine core. The opaque shade is applied in 1 mm layers and is covered by a matching universal shade.



9. How can I combine the shades from the BRILLIANT EverGlow shade system?

The following table provides an overview on possible shade combinations.

Universal shades:

Can be applied separately or in combination with opaque and/or translucent shades.

Translucent shades:

Can be applied separately or following the universal shade as a coating layer.

Opaque shades:

The masking ability is controlled by the thickness of the layer. To achieve an optimal blend-in effect, it is suggested to keep the total opaque shade layer thickness as small as possible and to cover it with universal shades.

BRILLIANT EverGlow SHADE COMBINATIONS												
Tooth colour (VITA)	Universal							Translucent		Opaque		
	BL	A1 / B1	A2 / B2	A3 / D3	A3.5 / B3	C2 / C3	A4 / C4	Trans	BLTrans	OBL	OA1	OA3
Bleach	xx								xx	xx		
A1		xx						xx	xx		xx	
A2			xx					xx	x		x	
A3				xx				xx	x			xx
A3.5					xx			xx				x
A4							xx	xx				
B1		xx						xx	xx	x	x	
B2			xx					xx	x		x	
B3					xx			xx	x			x
D3				xx				xx				x
C2						xx		xx				x
C3						xx		xx				x
C4							xx	xx				

Young / Bleached

Adult

Elderly

x suitable
xx very suitable

10. How does the blend-in effect of BRILLIANT EverGlow work?

Thanks to light scattering and light reflection on internal composite interfaces and thanks to a suitable translucency, the composite takes up the shade from the remaining natural tooth substance in the surrounding. The composite filling harmoniously integrates into the tooth and preparation margins are virtually invisible.

11. Which adhesive system is BRILLIANT EverGlow compatible with?

BRILLIANT EverGlow is compatible with established adhesive systems on the market:

- Self-etch technique (e.g. One Coat Self-Etching Bond)
- Total-etch technique (e.g. One Coat Bond)
- Selective-etch technique (e.g. A.R.T. Bond)
- Universal bonds (e.g. ONE COAT 7 UNIVERSAL)

In case of a high enamel ratio the total-etch technique is recommended. Please consult the manufacturer’s instruction for use.

12. How is BRILLIANT EverGlow polymerised?

BRILLIANT EverGlow is cured by any light curing unit (e.g. S.P.E.C 3®).

Maximum thickness of the layer and curing times:

Shade	Max. Layer Thickness	Exposure Time	
		≥ 800 mW / cm ²	≥ 1600 mW / cm ²
Universal Bleach, A1/B1, A2/B2, A3/D3, A3.5/B3, C2/C3, A4/C4	2 mm	20 s	10 s
Translucent Bleach Translucent, Translucent	2 mm	20 s	10 s
Opaque Opaque Bleach, Opaque A1, Opaque A3	1 mm	20 s	10 s

Note: BRILLIANT EverGlow must be cured layer by layer. Do not remove the inhibition layer since this would affect adhesion between the layers. In the event of underexposure there is a risk of insufficient curing. BRILLIANT EverGlow is light-sensitive. Avoid continuing exposure to strong light sources, especially operation- and/or sunlight.

13. Which finishing systems are recommended with BRILLIANT EverGlow?

COLTENE recommends the DIATECH ShapeGuards or the two step diamond polisher system DIATECH Comprepol Plus und Composhine Plus in combination with DIATECH Brushes. For interdental use DIATECH SwissFlex and ROEKO Abrasive and Polishing Strips are recommended.

14. How is BRILLIANT EverGlow to be stored?

BRILLIANT EverGlow should be stored at room temperature or in the refrigerator (4 – 23 °C), in a dry environment and without exposure to direct sunlight.

15. Does BRILLIANT EverGlow contain Bisphenol A (BPA)?

BRILLIANT EverGlow does not contain BPA by formulation but contains derivatives of BPA such as Bis-GMA and Bis-EMA which are widely used in state-of-the-art composites.

16. Is BRILLIANT EverGlow compatible with:

a) Fill-Up!?

To enhance aesthetics or gloss retention of the restoration, BRILLIANT EverGlow can be applied on top of Fill-Up! Please proceed as follows:

1. Etch with phosphoric acid according to the manufacturer's instruction for use.
2. Apply a chemically curing bond (we recommend ParaBond Adhesive A + B) or alternatively a light curing bond with activator (we recommend One Coat 7 Universal with activator) according to the manufacturer's instruction for use.
3. Fill the cavity with Fill-Up!. Stop underneath the preparation margin.
Shortly light cure Fill-Up! to reduce the inhibition layer while making sure not to contaminate it. In case the inhibition layer gets contaminated, the protocol of the adhesive system must be repeated.
4. Apply the covering layer with BRILLIANT EverGlow and cure with light.

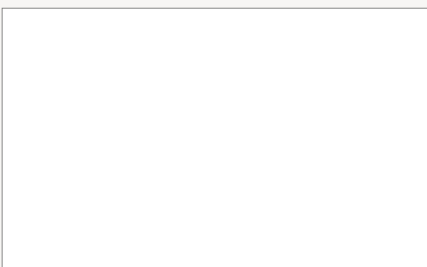
b) Flowable composite?

Commercially available flowable composites (e.g. SYNERGY D6 Flow) can be used in combination with BRILLIANT EverGlow as a liner or to correct minor defects.

c) Effect colours?

With Paint on Color COLTENE offers a set of 7 different effect colours for characterisation in anterior and posterior restorations: white, red, grey, yellow, brown, blue and white opaque. They are especially suitable for fissure colouring, imitation of chalk spots and enamel cracks.

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