Light-curing sub-micro-filler composites for direct restorations



TOKUYAMA Composites – The benchmark for esthetic restorations

- **◆** Unique chameleon effect due to sub-micron spherical fillers
- ♣ Perfect long-lasting aesthetics
- ♣ Optimal handling properties
- ◆ Outstanding physical properties



Shape perfected

Composite has become an important and indispensable part of the treatment concept in dental practices in the context of adhesive dentistry.

At the same time, the demands placed on composites as aesthetic restorative materials by both dentists and patients have increased. In addition to the high esthetic requirements, the composite must also secure a reliable restoration based on excellent physical properties. However, the basic prerequisite for achieving an excellent esthetic and durable restoration is ease of use of the composite.

In order to meet this basic requirement and the demands of the dentist and the patient for an esthetic and reliable restorative material, TOKUYAMA DENTAL designed unique composites that meet all these requirements. With the development concept for the ESTELITE and OMNICHROMA composites, TOKUYAMA meets the current demands for a state-of-the-art composite in terms of aesthetics, physics and ease of use. The unique ESTELITE and OMNICHROMA development concept is based on two essential components:

The size- and shape-controlled spherical composite fillers form the basis for reliable physical properties and aesthetics, which corresponds to a natural tooth.



An innovative polymerization process in the ESTELITE composite also ensures extremely fast but controlled curing without colour change after polymerization.

The development objective

A combination of aesthetics, reliability and usability

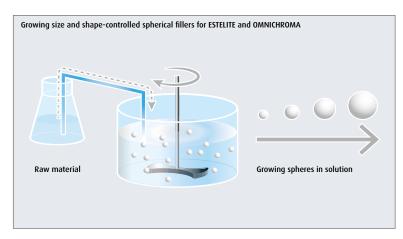
The extraordinary composites ESTELITE and OMNICHROMA are the result of an intensively sophisticated and innovative development concept. Size- and shape-controlled spherical sub-micron fillers, which are obtained in a fine manufacturing

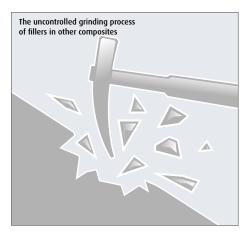
process, set new standards for aesthetic composite restorations. The long-standing development of the manufacturing process for fillers with special aesthetic, physical and user-friendly properties is the basis for the outstanding result.

Thanks to the unique fillers, ESTELITE and OMNICHROMA are extremely user-friendly to work with, as they do not stick to the spatula and are easy to polish.

Produced to perfection – Ultrafine spherical fillers

Compare growing fillers by the sol-gel process to the conventional grinding process

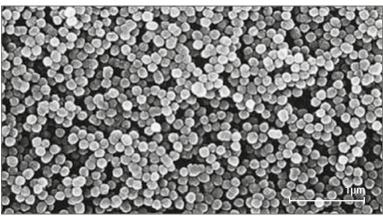


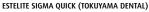


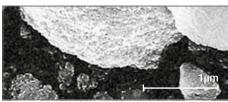












Filtek Supreme XT (3M Espe)

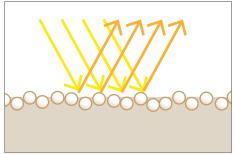


Tetric EvoCeram (Ivoclar Vivadent)

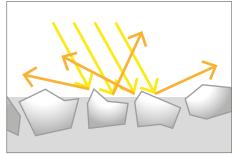
The principle of aesthetics and reliability – ultrafine spherical fillers

Mirror reflection

ESTELITE's and OMNICHROMA's spherical sub-micron fillers reflect light uniformly – like a mirror. The rough surfaces of other composites scatter light diffusely. On smooth surfaces, such as natural enamel, light is reflected away at the same angle (the angle of reflection equals the angle of incidence – the law of reflection). Our composites thus ensure a natural aesthetic appearance.



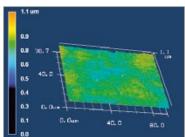
ESTELITE und OMNICHROMA (TOKUYAMA DENTAL)



Conventional nano-hybrid fillers

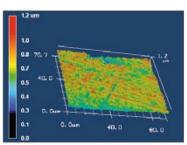
Lustre effect

Smooth surfaces reflect light with an equal angle of incidence and reflection, creating a high degree of lustre.



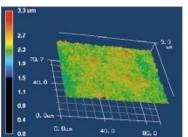
ESTELITE SIGMA QUICK (TOKUYAMA DENTAL)

Rough surfaces, on the other hand, reflect light in a random manner creating a dull matt appearance.



Venus Diamond (Kulzer)

Identically shaped ESTELITE and OMNICHROMA sub-micron fillers produce an extremely smooth surface with a long-lasting lustre.



Filtek Supreme XT (3M Espe)

Source: TOKUYAMA DENTAL R&D

Source: TOKUYAMA

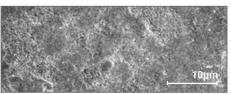
Abrasion resistance

ESTELITE's and OMNICHROMA's uniform and small spherical fillers are not easy to dislodge and create a very smooth surface that is highly resistant to abrasion.

The abrasion-resistant surface of ESTELITE and OMNICHROMA remains smooth permanently, so that the initial lustre of this composites remains permanent too. It does not become dull.

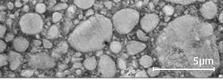


ESTELITE SIGMA QUICK (TOKUYAMA DENTAL) before the abrasion test

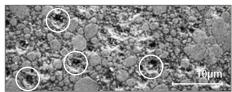


ESTELITE SIGMA QUICK (TOKUYAMA DENTAL) after 50,000 load cycles. Retention of smoothness.





iltek Supreme XT (3M Espe) before the abrasion test.

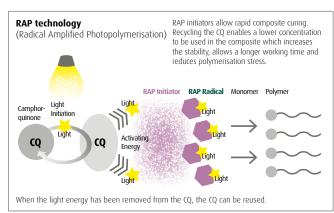


Filtek Supreme XT (3M Espe) after 50,000 load cycles. Fillers that have fallen out are visible.

ESTELITE COMPOSITES

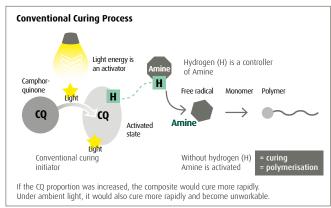
ESTELITE – "RAPID" controlled polymerisation

"RAPID" controlled polymerisation – Flexible working with rapid command cure



5 – 10 seconds of curing time

75 - 90 seconds of working time



20 - 40 seconds of curing time

50 – 70 seconds of working time

Polymerisation control

TOKUYAMA's RAP (radical amplified polymerisation) process gives fast curing plus high level resistance to ambient light to ensure generous working time, if required. The ease of placement, sculpting and finishing is under your control with rapid curing to save you time.

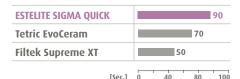
Long-lasting shade

The RAP technology ensures imperceptible shade change since the proportion of camphorquinone is much lower. Patented RAP technology uses camphorquinone over and over again, dramatically reducing the high concentration that is necessary in other composites. The result: almost no shade change after polymerisation.

Polymerisation time

ESTELITE SIGMA QUICK	10
Tetric EvoCeram	20
Filtek Supreme XT	20
[Sec.]	0 10 20 30

Working time





ESTELITE SIGMA OLUCK (TOKUYAMA DENTAL)



Filtek Supreme XT (3M Espe)



Tetric EvoCeram (Ivoclar Vivadent)

Source: TOKIJYAMA DENTAL R&D

Diffusion & Transmission

The high diffusion and transmission properties of ESTELITE ensure a uniform and gradual transition between tooth and composite. ESTELITE acts like natural tooth enamel and ensures excellent marginal adaption without the need for bevelling.



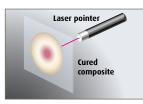
(TOKUYAMA DENTAL)



Filtek Supreme XT (3M Espe)



Tetric EvoCeram (Ivoclar Vivadent)



Source: TOKUYAMA DENTAL R&D

OMNICHROMA

The Future of Composites: Infinetely from A1 to D4 in a Single Syringe



Colour through light: For the first time, colours are not created by the addition of pigments, but rather by deliberately induced structural colours combining with the reflected colour of the surrounding tooth. The OMNICHROMA phenomenon uses the Smart Chromatic Technology along with the spherical fi llers from TOKUYAMA, which are manufactured according to the "cultured pearl principle".

Indications

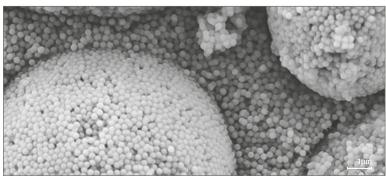
- **♣** Anterior and posterior areas
- **◆** Composite veneers
- **◆** Diastema closure
- **+** Composite/ceramic repairs

The effect: A single composite for all colours. Uniquely aesthetic. Uniquely smooth and shiny. Uniquely simple and time saving.

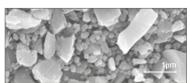
Properties

- ♣ Perfect colour matching
- **+** Simplified Inventory Management
- **◆** Excellent adaptativity
- **♣** Non-sticky
- ♣ Good polishability
- **★** Remarkable glossiness

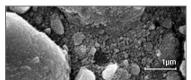
OMNICHROMA in a comparison study



OMNICHROMA (TOKUYAMA DENTAL)



Tetric EvoCeram (Ivoclar Vivadent



Filtek Supreme XTE (3M Espe)

Source: TOKUYAMA

A colour that adapts

In contrast to conventional composites, OMNICHROMA is intended to undergo an extreme colour change after curing and is also very practical when modelling. From white opaque at the beginning, the shade miraculously adapts to the real tooth shade during light curing.

The semi-translucent final shade allows a combination of the real tooth shade and the structural colour of OMNICHROMA.

Clinical case - First experiences with OMNICHROMA

"A dentist's dream coming true: always the right colour!"

Dr Erik-Jan Muts







OMNICHROMA BLOCKER

The ideal supplement for OMNICHROMA

OMNICHROMA BLOCKER is used if OMNICHROMA is not to adjust to the colour of a strongly discoloured cavity or if a higher opacity is required to cover the oral cavity in the case of larger class III or IV defects.

Indications

- ♣ Masking of slight discolourations
- **♣** Reconstructing highly opaque tooth

Properties

- **+** Ideal supplement for OMNICHROMA
- **♣** Good polishability
- **♣** Strong masking effect

Blocker in clinical use

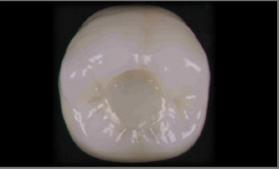
The general recommendation for the use of OMNICHROMA BLOCKER is a incremental

thickness of 0.5 mm. In the case of very opaque anterior teeth or strong discoloura-

tions, however, a larger layer thickness may also be necessary.



Discoloured cavity floor



OMNICHROMA BLOCKER (TOKUYAMA DENTAL)

Source: TOKUYAMA DENTAL R&D

Clinical case - First experiences with OMNICHROMA

"First I was sceptical, if the colour matching would fit. But easy application, convincing polishing results and surprisingingly good colour matching convinced me." Dr Markus Lenders









ESTELITE ASTERIA

Highly esthetic, light-curing anterior and posterior composite



ESTELITE ASTERIA is a light-cured radiopaque composite for anterior and posterior use. It considerably simplifies multilayer techniques, yet delivers outstanding aesthetics. The intense chameleon effect facilitates a remarkably natural look that cannot be distinguished from real tooth structure. Unlike multilayer techniques used with conventional composites, ESTELITE ASTERIA uses only 2 layers for optimal results.

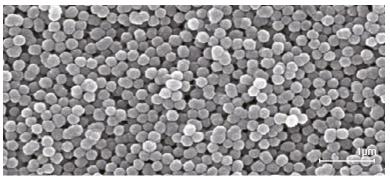
Indications

- **♣** Anterior and posterior areas
- **♣** Composite veneers
- **◆** Diastema closure
- ♣ Composite/ceramic repair

Properties

- **+** Unique chameleon effect
- **♣** Rapid curing in 10 seconds
- **◆** Extended working time of 90 seconds
- ♣ Very high lustre durability
- ♣ Abrasion resistance
- **+** Low linear shrinkage
- ♣ Optimal handling

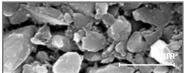
ESTELITE ASTERIA in a comparison study



ESTELITE ASTERIA (TOKUYAMA DENTAL)



Coramy (Dontenly Sirona)

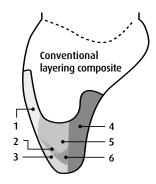


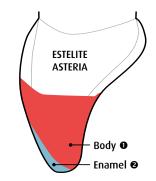
DENTAL

Source: TOKUYAMA DENTAL R&D

Easy application

While many aesthetic composites require elaborate layering techniques to achieve adequate results, ESTELITE ASTERIA has optical properties that allow anyone to easily achieve highly aesthetic results with only 2 layers.





Clinical Case – Anterior Tooth Trauma

"The control image after 7 days shows the excellent integration of the restoration. Due to the integration of the composite used and the simple layering technique, we were able to achieve a satisfactory result immediately, so that no further treatment was required.

The body shade perfectly covered the transition line between tooth and restoration. An absolutely natural incisal area was created with the aid of enamel NE and translucent TE".







Source: Prof. Simone Grandini

ESTELITE COLOR

Flowable composite for individual shade characterisation



ESTELITE COLOR is a low viscosity, flowable composite for individual colour characterization of direct and indirect plastic fillings. ESTELITE COLOR is applied under or between the layers of the composite restorative material to achieve individual and unique results.

- **♣** Custom shade characterisation of direct and indirect resin restorations
- **♣** Masking of discoloured teeth

- ♣ 9 different shades
- ♣ 4 different opaquers
- **+** Low viscosity
- **◆** Ideal supplement for ESTELITE ASTERIA

Range of shades

White

Blue

Yellow

Shades:





Ochre





Lavender



Dark brown

Opaquer:



Pink Opaque



High Chroma Opaque



Medium Chroma Opaque



Low Chroma Opaque

With the aid of different stains it is possible to replicate a very wide range of tooth characteristics. At the incisal edge, for example, a tooth can be given a more youthful appearance by adding a blue tint or a more mature appearance by adding a grey tint. Chromatic shades are ideal for neutralising grey areas.

Clinical cases



Preparation of the tooth and adhesive treatment.



ESTELITE COLOR (LCO or MCO or HCO) is applied evenly over the discoloured areas to increase the colour value.



After light-curing, a layer of dentine / body shade with the desired shade and shade saturation is applied over the opaquer.



After light curing, the enamel shade is applied.

Source: TOKUYAMA DENTAL R&D



Dentine/body shade is applied and light-cured.



ESTELITE COLOR (Ochre and Dark Brown) can be applied sparingly to the pits and fissures to accentuate colour saturation and create a natural effect.



After light-curing, the enamel shade is applied to the cavity and sculpted to primary anatomy.

Source: TOKUYAMA DENTAL R&D

ESTELITE SIGMA QUICK

Light-curing highly aesthetic anterior and posterior composite

ESTELITE SIGMA QUICK ist ein lichthärtendes, röntgenopakes Komposit, das sowohl für ästhetische Restaurationen im Frontals auch im Seitenzahn angewendet werden kann. Mit seinen gezielt konzeptionierten sphärischen Sub-Mikro-Füllstoffen, mit einheitlicher Größe von 0,2 µm, ermöglicht ESTELITE SIGMA QUICK Restaurationen, die im Ergebnis nicht mehr als solche zu erkennen sind.

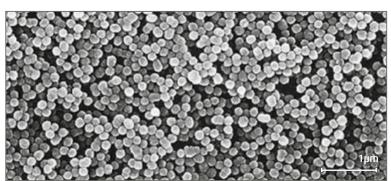
Indications

- **♣** Anterior and posterior areas
- **◆** Composite veneers
- **◆** Diastema closure
- **♣** Composite/ceramic repair

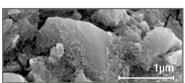
Properties

- **◆** Unique chameleon effect
- **♣** Rapid curing in 10 seconds
- **◆** Extended working time of 90 seconds
- **◆** Smooth surface with long-lasting lustre
- **♣** Excellent abrasion resistance
- ♣ Low linear shrinkage
- **+** Quick and easy to polish

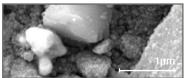
ESTELITE SIGMA QUICK in a comparison study



ESTELITE SIGMA QUICK (TOKUYAMA DENTAL)



Venus Pearl (Kulzer

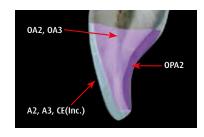


Harmonize (Kerr)

Source: TOKUYAMA DENTAL R&D

Range of shades

Opacity	Shade	Properties	Field of application	
CE (Clear Enamel) A1, A2, A3, A3,5, A4, A5 B1, B2, B3, B4, C1, C2, C3 Opalescence OA1, OA2, OA3 Opaque OPA2		Considerable chameleon effect due to high transparency	Enamel, multi-shade restorations	
		Slight opacity, chameleon effect	Dentine characterisation, multi-shade restorations, mono restorations	
		Higher opacity, not suitable for covering metals Fillings in the mola blocker to prevent translucency effect		
BW (Bleaching White), WE (White Enamel)		Transparency	Bleached teeth, insertion of shade effects	



The anatomical build-up of an anterior tooth in crosssection and its progressive reconstruction with ESTELITE SIGMA QUICK

Clinical case – Faster to lasting esthetic results

"ESTELITE SIGMA QUICK is a versatile composite system with impressive properties, both for demanding aesthetic reconstructions and for simple fillings in classes I-V.



Special aspects worth mentioning are the excellent chameleon effect, longlasting lustre, a long working time and a very short polymerisation time."





Dr. C. Stockleben

ESTELITE POSTERIOR QUICK

Light-curing posterior composite



ESTELITE POSTERIOR QUICK is a lightcured radiopaque composite that ensures reliable restorations with strong and impressive physical properties. An optimal combination of special fillers gives ESTELITE POSTERIOR QUICK properties specifically designed to resist the demands of the posterior region, creating restorations that are reliable and long-lasting.

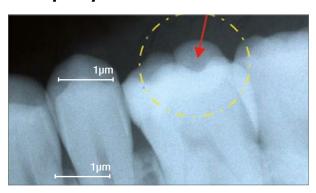
Indications

- ♣ Posterior area
- **+** Composite/ceramic repair

Properties

- **+** Unique physical properties
- **◆** Very good chameleon effect
- **♣** Rapid curing in 10 seconds
- ♣ Optimal handling
- **+** Low linear shrinkage
- ♣ High radiopacity

Radiopacity



With an excellent radiopacity of 290% Al mm, ESTELITE POSTERIOR QUICK is easy to see on X-ray images.

Source: TOKUYAMA DENTAL R&D

Flexural strength [MPa]

ESTELITE POSTERIOR QUICK	
Filtek Silorane	
Filtek P60	
Quixfil	
Gradia Direct	
	0.0 50.0 100.0 150.0 200.0 250.0

Compressive strength [MPa]

ESTELITE POSTERIOR QUICK	
Filtek Silorane	
Filtek P60	
Quixfil	
Gradia Direct	
	0.0 100.0 200.0 300.0 400.0 500.0

Source: TOKUYAMA DENTAL R&D

ESTELITE POSTERIOR QUICK mit 209 MPa

ESTELITE POSTERIOR QUICK mit 443 MPa

Clinical case – Tooth preservation using adhesive composite materials

"ESTELITE POSTERIOR QUICK represents the best choice when, in cavity classes I, II and IV, the fillings to be placed are exposed to high stress. Due to its very high radiopacity, with an 'aluminium equivalent of 290



per cent', ESTELITE POSTERIOR QUICK is particularly advantageous if the marginal seal or development of secondary caries in the marginal area of the filling has to be verified with an X-ray."





Dr. med. dent. Markus Th. Firla

ESTELITE UNIVERSAL FLOW

3 different viscosities for all kind of purposes

ESTELITE UNIVERSAL FLOW offers the user, according to his preference or also application, the optimal viscosity. The flow material is available in 3 different viscosities: Low, Medium or High. All viscosities have one thing in common: Universally applicable and resilient like a pasty composite.

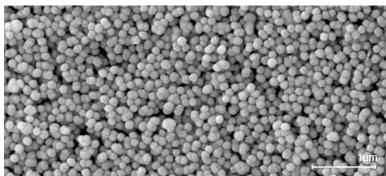
Indications

- **◆** Anterior and posterior areas
- **★** Cavity liner
- **♣** Blocking out undercuts
- **+** Composite/ceramic repair

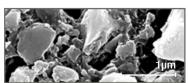
Properties

- ♣ Choice of three viscosities
- **+** Enhanced chameleon effect
- **♣** Rapid curing in 10 seconds
- **♣** Improved flowability
- **♣** High lustre durability
- **+** Low shrinkage
- **+** Excellent polishability
- ♣ Outstanding resilience

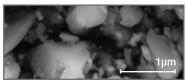
ESTELITE UNIVERSAL FLOW in a comparison study



ESTELITE UNIVERSAL FLOW (TOKUYAMA DENTAL)



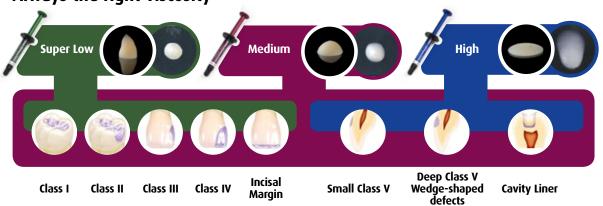
G-aenial Universal Flo (GC)



Tetric EvoFlow (Ivoclar Vivadent)

Source: TOKUYAMA DENTAL R&D

Always the right viscosity



Clinical case – tooth 46

"Always the right viscosity with a perfect polishability make this flow the means of choice."







Dr Markus Lenders

ESTELITE BULK FILL FLOW

Innovative "edgeless" fillers ensure low-stress and safe curing.

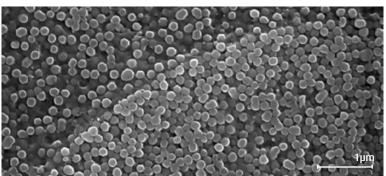
Innovative "edgeless" fillers ensure low-stress and safe deep curing. Additionally the controlled refractive index of the ESTELITE BULK FILL FLOW also shows that bulkfill materials can also be esthetic.

- **♣** Anterior and posterior areas
- **+** Cavity liner
- **♣** Blocking out undercuts
- + Composite/ceramic repair

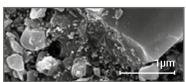
Properties

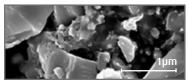
- **+** Reduced polymerisation stress due to new "edgeless" composite fillers
- **★** Sufficient opacity for esthetic restorations without capping layer
- **♣** Rapid curing in 10 seconds
- **★** Excellent cavity adaption
- **+** Self-levelling
- **★** Controlled refractive index

ESTELITE BULK FILL FLOW in a comparison study



ESTELITE BULK FILL FLOW (TOKUYAMA DENTAL)



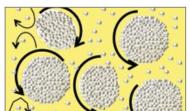


Tetric EvoFlow Bulk Fill (Ivoclar Vivadent)

Source: TOKUYAMA DENTAL R&D

Reduced polymerisation stress

The shape of the spherical fillers combined with the innovative "edgeless" composite fillers ensures that there is only little friction and thus a low stress level during polymerization. Optimal for safe depth curing up to 4mm.



ESTELITE BULK FILL FLOW: composite filler ("edgeless")



Conventional composite: inorganic fillers (irregular)

During the polymerization process, the

material becomes increasingly opaque and

layer is required. In this way, fast and esthetic

covers so well that no additional capping

Clinical case



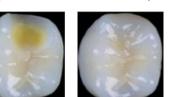
Bulkfill composite + occlusal top layer



ESTELITE BULK FILL FLOW without occlusal top layer

Aesthetic result

The technology of spherical fillers allows TOKUYAMA DENTAL also to control the refractive index. This is used in the ESTELITE BULK FILL FLOW. The uncured material is initially translucent so that the polymerization light penetrates to the bottom of the cavity.





ESTELITE BUILK FILL FLOW



restorations are achieved.

Filtek Bulk Fill (3M Espe)



Venus Bulk Fill (Kulzer)

PRODUCT OVERVIEW PASTE

		High-End composite	Universal composite			Posterior composite
	First ESTELITE ASTERIA Criterion					
		ESTELITE ASTERIA	ESTELITE SIGMA QUICK	OMNICHROMA	OMNICHROMA BLOCKER	ESTELITE POSTERIOR QUICK
Class I	Stability	Very good	Very good	Very good	-	Excellent
Class II	Aesthetic	Excellent	Excellent	Very good	_	Very good
Class III	Aesthetic	Excellent	Excellent	Very good	-	Good
Class IV	Aesthetic	Excellent	Excellent	Very good	-	Good
Class V	Aesthetic	Excellent	Excellent	Very good	_	Good
Small cavities	Handling	_	_	_	-	_
Cavity lining, flat tunnel-formed cavities	Handling	_	_	_	-	_
Light curing		Yes	Yes	Yes	Yes	Yes
Radiopaque		Yes	Yes	Yes	Yes	Yes
Repair material for ceramics/composites		Yes	Yes	Yes	Yes	Yes
Curing time		10 seconds	10 seconds	20 seconds	20 seconds	10 seconds
Annotations		Sub-micron filler with spherical filler particles, simplified layering concept for excellent esthetics	Sub-micron filler, extremely fast polymerization, excellent esthetics	Controlled sub-micron fillers to create structural colour, perfect colour matching	Sub-micron filler with increased opacity against discolouration and for highly opaque teeth	Combination of sub-micron fillers and irregularly shaped fillers, extremely fast polymerization, extremely resilient
Shades		12 shades: A1B, A2B, A3B, A3.5B, A4B, B3B, BL, NE, TE, YE, WE, OcE	20 shades: A1, A2, A3, A3.5, A4, A5, B1, B2, B3, B4, C1, C2, C3, OA1, OA2, OA3, OPA2, BW, WE, Inc. (CE)	1 shade: Universal	1 shade: Opaque	4 shades: A1, A2, A3, CE
Available as PLT		Yes	Yes	Yes	Yes	No

PRODUCT OVERVIEW FLOW

		High-End composite	Flowable composite			Bulk Fill
	First criterion					
		ESTELITE COLOR	ESTELITE UNIVERSAL FLOW HIGH	ESTELITE UNIVERSAL FLOW MEDIUM	ESTELITE UNIVERSAL FLOW SUPER LOW	ESTELITE BULK FILI FLOW
Class I	Stability	_	Excellent	Excellent	Excellent	Excellent
Class II	Aesthetic	_	Excellent	Excellent	Excellent	Excellent
Class III	Aesthetic	_	Good	Excellent	Excellent	Good
Class IV	Aesthetic	_	Good	Excellent	Excellent	Good
Class V	Aesthetic	_	Good	Excellent	Excellent	Good
Small cavities	Handling	_	Excellent	Very good	_	Excellent
Cavity lining, flat tunnel-formed cavities	Handling	-	Excellent	Very good	-	Excellent
Light curing		Yes	Yes	Yes	Yes	Yes
Radiopaque		Yes	Yes	Yes	Yes	Yes
Repair material for ceramics/composites		Yes	Yes	Yes	Yes	Yes
Curing time		30 seconds	10 seconds	10 seconds	10 seconds	10 seconds
Annotations		Sub-micron filler with enriched colour pigments	Spherical composite fillers and spherical sub-micron fillers	Spherical composite fillers and spherical sub-micron fillers	Spherical composite fillers and spherical sub-micron fillers	Spherical composite fillers and spherical sub-micron fillers
Shades		13 shades: blue, grey, lavender, ochre, dark brown, white, yellow, clear, red, pink opaque, low chroma opaque, medium chroma opaque, high chroma opaque	7 shades: A1, A2, A3, A3.5, OPA2, OPA3, OPA4	12 shades: A1, A2, A3, A3.5, A4, A5, B3, OPA2, OPA3, OPA4, CE, BW	6 shades: A1, A2, A3, A3.5, A4, A5	5 shades: A1, A2, A3, B1, U
Available as PLT		No	No	Yes	No	Yes

Manufacturer



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