

BRILLIANT Crios

A new era in composite restoration

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BRILLIANT Crios is a thermomechanically cured high-performance composite for use in CAD/CAM restorations.

To date, its use for the indication of tooth-coloured restorations in the posterior tooth area has been determined by the material properties of the restoration material selected. For all-ceramic restorations, restricted vertical clearance and bruxism in particular caused problems. Clearly defined shoulder preparations with corresponding material strength were also prerequisites for using ceramic CAD/CAM restorations. The bond between the luting composite and the ceramic was also a weak point. A de-

marcation line was often apparent due to the different light refraction in the marginal area.

On the other hand, the use of composite as a CAD/CAM restoration material offers a range of benefits. No luting gap develops but instead there is a monophase due to the homogeneous bond between the workpiece and the luting composite, which in turn leads to a good transitional effect and natural aesthetics. The high flexural strength and the tooth-like modulus of elasticity create a resistant restoration with a shock-absorbing effect, which is particularly positive for bruxism. For these reasons, BRILLIANT Crios is a pure com-

posite. To satisfy the most stringent aesthetic demands, the material is available in 9 Low Translucent and 4 High Translucent shades and sizes 12 and 14.

Clinical patient case

In this case we see tooth 37 with a recently placed ceramic inlay. It has a number of fractures within the workpiece (Fig. 1), leading to the patient often complaining about bite pain when chewing. The ceramic inlay was removed in its entirety but intact and sealed dentine in areas near the pulp was protected (Fig. 2). After the visual impression taking, the cavity was covered with a moist cellulose swab to prevent the tooth drying out and thus any possible postoperative



Fig. 1: Initial situation



Fig. 2: Cavity preparation



Fig. 3: Construction



Fig. 4: BRILLIANT Crios composite block



Fig. 5: Ground inlay

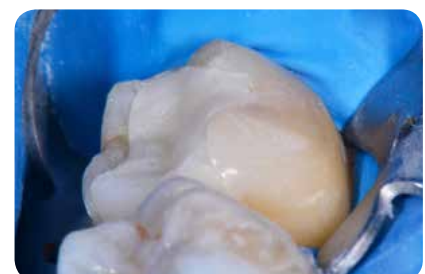


Fig. 6: Try-in

issues. The inlay was then designed and the material BRILLIANT Crios was selected in the software for the milling process. In the present case the shade selected was A2 HT (Fig. 3 + Fig. 4).

The resistance of the material was already apparent after the milling process because the sprue still retained the inlay – a ceramic restoration would have broken off here. The fit was outstanding and a proximal contact that was too close could be easily corrected using a polisher (Fig. 5 + Fig. 6).

For the subsequent procedure of adhesive luting, the proximal region was isolated with a sectional matrix and adaptively stabilised with a wedge beforehand. In this case the total-etch technique was used with the enamel etched for 30 seconds with phosphoric acid and the dentine for 15 seconds (Fig. 7). The etching gel was then rinsed for around 30 seconds to remove the dissolved precipitates and to also neutralise the acidic pH environment of the tooth. In the next step

the cavity was dried with oil-free air and the etching pattern was checked. For the following steps up to the definitive luting, the operating lamp was switched off.

The adhesive ONE COAT 7 UNIVERSAL (COLTENE) was used as bonding agent and rubbed in for 20 seconds (Fig. 8 + Fig. 9). A gentle stream of air is applied to prevent the formation of puddles or a too thick bond layer. Pre-curing the bond in the cavity is mandatory and is done for 20 seconds with $> 1000 \text{ mW/cm}^2$ (Fig. 10). On the side of the workpiece, the luting surface is sandblasted with $50 \mu\text{m}$ aluminium oxide (Al_2O_3) and cleaned with pure alcohol but not etched (Fig. 11).

To obtain an optimal bond between the materials, according to the manufacturer and the luting protocol the subsequent application of the adhesive ONE COAT 7 UNIVERSAL to the luting surface of the workpiece is essential. The bond is rubbed into the surface for 20 seconds and then air blown (Fig.

12). To ensure a close fit, at this point no light polymerisation is carried out. The final curing will be subsequently carried out through the restoration. Applying silane solution is neither necessary nor useful because BRILLIANT Crios is a pure composite. For the cementing of inlays, overlays or a full crown, either a dual-curing, composite-based cement or a normal restoration composite can be used. In this case, the universal composite BRILLIANT EverGlow in shade A2/B2 was used (Fig. 13). The versatility of this submicron material allows application without the use of ultrasound. The restoration composite was adapted to the cavity walls and the inlay was inserted with gentle but steady pressure (Fig. 14).

Because the excess remains on the margin and does not flow away, precise removal and cleaning of the marginal areas is possible with no time pressure. After checking the correct processing of the margins, each restoration surface was light cured for at least 30 seconds

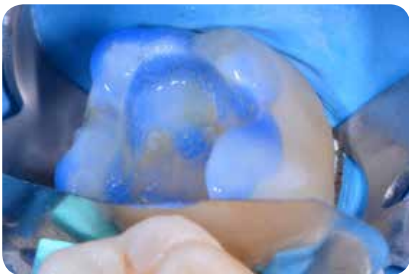


Fig. 7: Total-etch technique



Fig. 8: Adhesive used: ONE COAT 7 UNIVERSAL



Fig. 9: 20 seconds' application

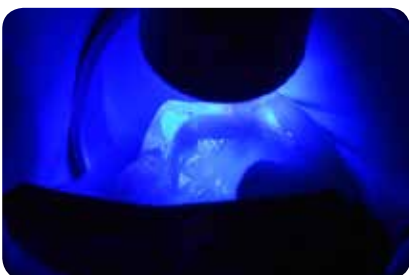


Fig. 10: 10 seconds' light curing



Fig. 11: Sandblasting inlay with $50 \mu\text{m}$ Al_2O_3



Fig. 12: Application of ONE COAT 7 UNIVERSAL

with $> 1000 \text{ mW/cm}^2$, starting transdental buccal and lingual (Fig. 15). Placement with restoration composite of the corresponding shade has an aesthetic advantage and also simplifies the finishing of the marginal areas. Because the workpiece in this case is made of composite and has a considerably reduced grinding resistance compared to ceramic, the processing of the margins can be started immediately with an 8- μm diamond polisher. Likewise, proximally the excess can be easily finished back without leaving any residue, using an oscillating file, for example, because the surface hardnesses do not vary. For occlusal adjustment, a pre-polishing agent such as Comprepul Plus and for high-gloss polishing depending on the anatomy Composhine Plus tips or the ShapeGuard wheel (DIATECH) can be used (Fig. 16 +17). Immediately after completing the restoration, the compos-

ite inlay is perfectly integrated into the remaining tooth structure (Fig. 18). Depending on requirements, at this point customisation can also be carried out. For this purpose, the fissures in non-load bearing areas can be ground away with a pointed 40- μm diamond instrument and sandblasted. After cleaning with alcohol, these areas are again wetted with ONE COAT 7 UNIVERSAL and light cured. Customisation can be carried out with methacrylate-based stains. The same procedure applies for repairs of all types. The patient has been free of symptoms since renewing the inlay using BRILLIANT Crios.

In conclusion, the restoration with BRILLIANT Crios proceeds more easily and is also associated with a better clinical outcome in terms of aesthetics and wearing comfort.

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Fig. 13: Application of BRILLIANT EverGlow to the cavity



Fig. 14: Insertion of inlay and removal of excess material

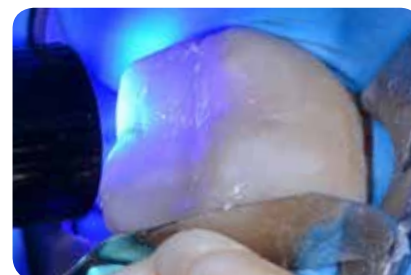


Fig. 15: Light curing on each side for 30 seconds



Fig. 16: Pre-polishing



Fig. 17: High-gloss polishing



Fig. 18: Final situation