

## SYNERGY® D6 FLOW

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**In March 2009 Coltène/Whaledent introduced a new nanofilled and x-ray-opaque flow composite: SYNERGY D6 FLOW. SYNERGY D6 FLOW is based on the proven and successful technology of SYNERGY D6 composite, with the excellent mechanical and aesthetic properties of the flow material.**

As long-term users of Coltène/Whaledent SYNERGY D6 and Miris<sup>2</sup>, we decided to add the new SYNERGY D6 FLOW to the range of materials used in our practice.

Now that SYNERGY D6 FLOW has met all our expectations after nearly a year of everyday use, we can now pass on the benefits of our experience with using and the durability of the new material - flow-

able composites can be used in a wide range of different applications:

- It can be used as an independent filling material. It is used in this way to seal expanded fissures, minimally invasive filling of cavities in the anterior and posterior tooth regions and for class V cavities.
- Flowable composites can also be used as a supplement to a well-filled, mouldable filling material such as SYNERGY D6. Uses such as splinting cavity margins at the transition to the matrices and the cavity floor are just two examples.
- Flowable composites can also be used to repair existing restorations.
- Flowable composites are suitable for cemented-in placement of ceramic

restorations, where complete and sufficient light curing of the material can be assured.

We would like to present a few cases as examples of the options and properties of SYNERGY D6 FLOW:

The patient presented herself with marked tooth defects, particularly in the cuspid region of the maxilla on the right side (Fig. 1). A deep smile line meant that the aesthetics were not compromised by the long tooth neck, but the patient complained about sporadic temperature sensitivity at tooth 13. We decided in this case in favour of a restoration with SYNERGY D6 FLOW to preserve the healthy tooth substance. The clinical situation made achieving complete dryness with a rub-



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6

ber dam very difficult. On the other hand fluid penetration to the anterior tooth region was very easy to control. A thread was placed to ensure dryness on the sulcus side. It was not necessary to wet the thread with blood-coagulating substances because of the patient's excellent oral hygiene (Fig. 2).

After cleaning the tooth and preparation of the existing enamel to preserve the tooth substance, the tooth was etched with phosphoric acid using the total etch procedure (Fig. 3).

Then the cavity was prepared with the modern one-bottle adhesive Systems One Coat 7.0 from Coltène/Whaledent. SYNERGY D6 FLOW was applied to the cavity (Fig. 4). The consistency of the material is very important for such fillings. The flowable composite should coat the cavity completely and also reliably fill fine structures such as enamel undercuts (Fig. 5). At the same time the material must be stiff enough so it does not flow over the margin of the cavity into the sulcus. In addition, it would be impossible to mould a convex shape if the material were not

stiff enough. The viscosity of SYNERGY D6 FLOW is good enough that it is very easy to create a retained, rounded tooth shape. The thixotropy of SYNERGY D6 FLOW is so well adjusted that the composite can reliably fill even the finest structures (Fig. 6).

After coarse trimming of the restoration using a fine diamond, the final polishing was conducted (Fig. 7). The neighbouring teeth were restored in another session.

Defining the shading of such large class V cavities is often a problem that can only be resolved by coating with materials of different shades. The optimum veneering capacity of SYNERGY D6 FLOW means that the restoration margins or transitions can be made invisible without time-consuming coating techniques (Fig. 8). This is a property that we have become acquainted with and find very useful with the mouldable high-filled SYNERGY D6 composite.

SYNERGY D6 is a nanofilled universal composite, which covers a wide spectrum of tooth shades with its excellent optical

veneering properties. This means that in our daily work we only require a small number of shades and we can achieve excellent aesthetics.

The next patient presented in our practice with minor pain in the right mandible (Fig. 9). The patient also requested an aesthetic reconstruction of his posterior teeth. After removing the defective restorations at teeth 45, 46 and 47, cavities were created, the enamel margins were prepared, polished and a rubber dam was placed. Then the matrices were placed and anchored with wooden wedges. The cavity was etched with 35% phosphoric acid etching gel and the hard tooth substances were prepared for the restoration with A.R.T. Bond from Coltène/Whaledent (Fig. 10).

Before placing the high-viscosity, mouldable filling material, we coated the cavity floor and the transitions between cavity margin and matrix with a flowable composite (SYNERGY D6 FLOW). This procedure is recommended by various authors with reference to the reduction of stress in the restoration caused by the



Fig. 7



Fig. 8



Fig. 9

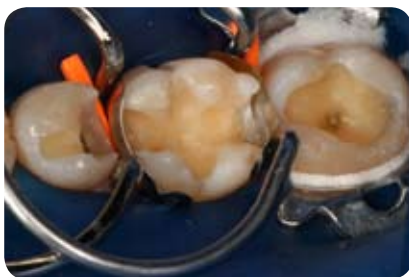


Fig. 10



Fig. 11



Fig. 12

polymerisation shrinkage. In our practice we have observed virtually no postoperative sensitivity since we have been using this procedure.

When applying the material, it is particularly important to ensure that all cracks and gaps are filled with SYNERGY D6 FLOW. A proven method is to move the material slightly in the cavity with the application cannula. The thixotropy of SYNERGY D6 FLOW means that the motion temporarily reduces the viscosity of the material, allowing it to flow into the narrowest gaps and transitions. The colour matching of SYNERGY D6 FLOW to SYNERGY D6 means that it is irrelevant for the aesthetics whether Flow is applied on the cavity floor only or in the visible area. Once the Flow has been exposed to light and cured, SYNERGY D6 is applied incrementally to the teeth and the chewing surfaces are modelled (Fig. 11+12). Little time is required for shaping, because it is not necessary to layer a separate dentine core in the posterior tooth region, even for an aesthetic result. After finishing teeth 36 and 37 the same procedure was followed for tooth 35.

The final result after trimming and polishing can be confidently compared with highly aesthetic restorations using multi-layering techniques (Fig. 13). Dr Mario Besek, Zürich, writes in his assessment of the material: „SYNERGY D6 is a simplified system designed for daily use, which yields

similar or even better results with less expense“. It would be impossible say it better and we can fully confirm his judgment based on our daily experience in our daily work with SYNERGY D6.

Another application of SYNERGY D6 FLOW is for cementing in ceramic restorations. In this case teeth 36 and 37 were to be restored with CAD/CAM ceramic inlays. The leaking amalgam fillings were removed a few months previously, the caries was excavated and teeth built up adhesively with a dentine-adhesive reconstruction of Paracore from Coltène/Whaledent. After a rest phase and a final check of the sensitivity of the teeth, it was time to complete the final restoration of the teeth (Fig. 14).

The teeth were prepared for delivery of the all-ceramic restorations at the start of the treatment session. The regions close to the pulp in particular remained covered by Paracore to prevent additional irritation of the pulp. This procedure also enabled full preparation without worrying about undercuts. Finally, the restorations were manufacture by CAD/CAM and fitted (Fig. 15).

Absolute dryness with a rubber dam is essential for final placement of ceramic restorations (Fig. 16). After placing the rubber dam and checking once again that the restorations fit perfectly, the ceramic inlays were bonded to a ball

plug to enable processing without contact to prevent contamination of the prepared ceramic surfaces. The ceramic restorations were etched with hydrofluoric acid for 60 sec. and silanised with adhesive silane for five minutes. In the meantime, the teeth were prepared. We prefer placing the individual restorations piece by piece. It is very important to ensure that the neighbouring cavity is not contaminated by bonding or composite. If the contaminated cavity was accidentally light-cured, it would no longer be possible to fit the ceramic inlay perfectly.

Transparent matrix bands were wedged proximally to prevent contamination of the neighbouring cavities. It is important to ensure that the restorations can be placed in the cavities in spite of the matrix bands. Then the cavity was etched with 35% phosphoric acid and prepared for the ceramic restoration with the A.R.T. Bond Systems primer.

After preparation of the cavity and restoration both are thinly coated with the A.R.T. Bond Systems bond. The bond is blow-dried thin after a brief waiting period. Caution: the bond must not be cured, otherwise the restoration my no longer fit!

Now, SYNERGY D6 FLOW in the matching shade is applied to the ceramic restoration. The optimum thixotropy of the material also proves its worth in this



Fig. 13



Fig. 14



Fig. 15

application. SYNERGY D6 FLOW can be applied perfectly and wets the prepared surfaces of the restoration just right without flowing too much or dripping from the restoration (Fig. 17).

The prepared restoration is now placed in the cavity and any excess is removed. It is not necessary to coat the margins with glycerine gel, because there is no significant inhibition layer and therefore no visible or palpable marginal joints are formed after polishing. The restoration is exposed to light for 60 seconds per surface, then the excess is removed and the proximal surface to the neighbouring restoration is trimmed and polished. The same procedure is followed for the next restoration. After removal of the rubber

dam the contact points to the restorations are accurately adjusted again. Then the restorations and the restoration margins are given a final trim and polish.

The photo shows an excellent view of the lack of margins and how well the ceramic restorations are integrated into the tooth. The chameleon effect of SYNERGY D6 FLOW is shown at its best in this case (Fig. 18). It is clear that Coltène/Whaledent with the flowable composite SYNERGY D6 FLOW has developed a material that we are very pleased to have as part of our practice. This material is an ideal supplement for the nanofilled composite SYNERGY D6, which we have been using successfully for a long time. SYNERGY D6 FLOW is also excellent as a stand-

alone material for minimally invasive cavities and class V cavities and also as a repair material and for adhesive placement of all-ceramic restorations. With its outstanding viscosity and the well-known chameleon effect known from SYNERGY D6 it makes our daily work easier and we could not do without it now

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Fig. 16



Fig. 17



Fig. 18