Three stars for maximum shade accuracy

Part 3: Shade reproduction and shade control has never been so precise or reliable

When fabricating high-quality dental restorations the aim is always to reproduce the tooth shade so accurately that there is no visible difference between the crown or subsequent restoration and the natural dentition. Whereas adapting the required tooth shade to the patient’s remaining dentition previously required painstaking mixing of nuances, step-by-step adjustment and the experienced eye of a dental technician, thanks to VITA A, shade reproduction is now part of a systematic process chain comprising shade determination, shade communication, shade reproduction and shade control (as reported in Parts 1 and 2 of this series).

In order to achieve an esthetically pleasing restoration, determination of the tooth shade is thus equally as important as exact transfer of the shade data to the laboratory and the actual reproduction of the shade using the material in question. The final step then comprises the direct comparison of the reproduction with the order sheet, in other words verification of the restoration with regard to exact correspondence with the patient’s natural tooth shade.

Shade values at the touch of a button

Thanks to the option of digital shade taking using VITA Easysmile Advance, shade taking has become even easier and more precise. In a matter of seconds, the patient’s individual shade data is available at the touch of a button on the display, and can be saved, sent, and compared. Ceramists can use this device both for shade taking as well as during layering in order to verify the lightness, chroma and hue.

Three stars indicate accuracy

However, with Easysmile, subsequent visual inspection of a restoration is no longer an imperative; instead this can be performed based on a further digital measurement. All that is left for the dental technician to do is to compare the basic shade data taken with that of the control measurement in order to check whether the reproduced shade corresponds to or deviates from the patient’s natural shade nuances. If the required restoration shade is 3M1, for example, the digital display of the Easysmile measurement device indicates how closely this shade has been matched in the reproduction with a rating of 1 to 5 stars. One star stands for “inadequate”, three stars for “exact”. If three stars appear on the display this also means that the lightness, chroma and hue values measured are exactly within the limits for the required shade. If the values deviate, the dental technician must rework their reproduction and measure it again. The technician can use the differences in details – “L” stands for “Lightness”, “C” for “Chroma” and “H” for “Hue” – in the restoration for this purpose (Fig.1).

This procedure can be repeated as often as required until the result is satisfactory. The range of features offered by this convenient, compact device is impressive: it provides reliable measurements within seconds, in 3D-MASTER, VITA classical A1-D4, and VITABLOCS shades.

The material selected by the dental technician for the restoration is not important here – a significant advantage of VITA materials is, however, that the system components are perfectly adapted to one another. VITA also offers a comprehensive product range in this respect: prosthetic teeth, veneers, acrylics and all-ceramic restorations. These are esthetically impressive with their natural translucency, fluorescence and opalescence.

Optimum shade reproduction with feldspar ceramics

The CAD/CAM fine-structure feldspar ceramic VITABLOCS RealLife (Fig. 2) has been setting new standards since June 2010 in high esthetic anterior restorations.

The three-dimensional block structure of VITABLOCS features a dentin core and enamel shell and thus has a structure comparable to that of natural dentition. The curved graduation of shade between the incisal and cervical areas in anterior dentition is thus replicated. A special software enables the planned restoration to be positioned perfectly in a virtual block. Positioning is flexible, allowing adjustments in all three spatial planes and providing the dental surgeon and dental technician with maximum creative scope.

VITABLOCS RealLife is available in a total of six VITA SYSTEM 3D-MASTER shades.

Shade reproduction requires a solid basis

In terms of shade reproduction, VITA has also launched a new shade concept this year for coloring frameworks made from VITA In-Ceram YZ - the new VITA In-Ceram YZ COLORING LIQUIDS.

The new concept comprises the basic shades “light” and “medium” that allow shade reproduction in accordance with the VITA SYSTEM 3D-Master and VITA classical A1-D4 shade system, as well as the additional shades “intense” and “neutral” that can be mixed with the basic shades for customized shade reproduction. In this way, VITA shade guide shades can now be reproduced in combination with the veneering ceramic VM9. This is particularly beneficial when it comes to the medium hues: they can now be reproduced more precisely.

All these innovations clearly show that the VITA system components – perfectly adapted to one another – ensure maximum precision in shade reproduction, accurate verification of the success of the restoration as well as excellent esthetic results.

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VITA SUPRINITY - the new generation of glass ceramic

With the zirconia reinforced lithium silicate ceramic, in short ZLS, VITA Zahnfabrik has developed a new generation of glass ceramic materials in collaboration with Degudent GmbH and the Fraunhofer Institute for Silicate Research ISC. The new glass ceramic is marketed by VITA Zahnfabrik under the name of VITA SUPRINITY.

With a zirconium dioxide intermediate layer constituting the core of the material, ZLS ensures excellent mechanical properties. The high strength and reliability of the new material gives CAD/CAM practice and laboratory users a wide range of possibilities for application. VITA SUPRINITY is distinguished by its outstanding mechanical strength and is also highly user-friendly. The new glass ceramic allows easy manual reworking and excellent polishing, and can also be crystallized without auxiliary firing paste. Furthermore, its optimum edge stability ensures improved precision. The end results are esthetically impressive with their natural translucency, fluorescence and opalescence. With a wide range of indications including anterior and posterior crowns, super-constructions on implants as well as veneers, inlays and onlays, the new generation of glass ceramic is highly versatile. The material is available in the geometries LS1A (16 x 14 x 12 mm) for the CEREC inLab MC XL system in the shades (M1, A1, A2, A3, B2, C2 and D2, each in two different degrees of translucency (T = Translucent, HT = High Translucent). The VITA SUPRINITY Polishing Sets are recommended for the polishing of VITA SUPRINITY restorations. Shade characterization is possible with the new VITA AKZENT Plus stains. The fine-structure feldspar ceramic VITA VM 11 was developed especially for the individualization of restorations made of the new glass ceramic. The market introduction of VITA SUPRINITY, together with the low-melting veneer ceramic and the special polishing instruments, is scheduled for autumn 2013.

Press Release: VITA

VITA SUPRINITY - the new generation of glass ceramic

New: the zirconia reinforced lithium silicate ceramic VITA SUPRINITY (Photo Courtesy of VITA)

Fig. 1: Shade reproduction and shade control at the touch of a button using the digital VITA Easysmile Advance measurement device

Fig. 2: Nature shows us the way: new CAD/CAM anterior esthetics in three dimensions with VITABLOCS RealLife

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