

The art of mimicking nature

Life-like aesthetics is considered an essential pre-requisite to meet the patient's expectation. Ceramic restorations can be customised to mimic the nuances of natural teeth and harmonise with the natural oral milieu.

The wide variety of available concepts requires the user to acquire a comprehensive knowledge of materials being used and their resultant colour effects. Vintage ART porcelain stains were developed in collaboration with internationally reputed dental technicians by analysing natural teeth and accurate reproduction techniques.

Life-like colours

Colour is an integral part of our lives and often, associated with certain emotions. Although colour is only one of the many attributes, it may be the most important criteria for acceptance of a restoration by the patient, along with shape and function. It is not surprising that patients today are more discerning and expect both anterior and posterior restorations to be as natural as possible.

With the development of new generation of stains, the nuances in natural teeth are easy to recreate in ceramic restorations. Vintage ART porcelain stains are a range of fluorescent stains with glass coated colour pigments that remain stable even after repeated firing. These versatile stains are recommended for internal and external shade modifications in all high-fusing porcelain-fused-to-metal (PFM) systems. They can also be applied to all high-fusing metal-free ceramic restorations with zirconia / alumina frameworks, CAD/CAM ceramic blocks, pressed ceramics and artificial porcelain teeth.

As a result of its microfine particle structure, these ready-to-use paste stains, can be intermixed as desired and exhibit excellent application properties with a superior masking capacity. Even the ready-to-use glazing paste is highly fluorescent and enhances the natural color effect (Figs. 1 and 2).



Figure 1 & 2 :
Natural
appearance
in daylight
and
ultraviolet
light



The Colour concept

The VINTAGE Art system consists of 31 individual colours altogether that are classified into three main groups based on applications in dental practices and laboratories.

Base Colour stains

This group includes the basic primary and secondary colours. The Base Color stains also offer a variety of options for natural coloring or necessary correction of porcelain work. The value (lightness) of the colours can be systematically increased or decreased (Figs. 3 to 5) by adding the achromatic colours White, Grey and Black in certain ratios.



Figure 3 : Primary colours P, Y, Bl.



Figure 3 : Secondary colours O, Gr, V.



Figure 3 : Achromatic colours W, G, B.

The Base Colour circle

The well-known theory of colour mentions that almost any individual hue can be obtained using the primary and secondary colours. By mixing the colours in different ratios, the intensity of the hue is reduced. Complementary colours are used to match the patient's natural tooth e.g. the greenish hue of a ceramic restoration can be corrected with the aid of a reddish complementary color (Fig.6&7).



Figure 6 : The color circle shows the primary colours Pink, Yellow and Blue, with the secondary colours arranged in between. The achromatic colours are located at the center of the circle. Colours located opposite each other in this circle are known as complementary colours. If mixed in equal quantities, complementary colours will neutralize each other and turn grey. This phenomenon is based on the subtractive color mixing theory.



Figure 7 : Shade of a ceramic restoration matched with the complementary color Pink. A2 shade sample / greenish crown + Pink → A2 shade sample / crown after shade correction.

The achromatic colours White, Grey and Black are used to match the value (lightness). Grey and Black if applied to the surfaces of opaques or opaque liners helps reduce light reflection. Opacity is simulated by adding a certain quantity of white (Fig. 8).



Figure 8 :
Achromatic colours

Color Stains: Individual tooth characteristics can be simulated to match the adjacent natural teeth (Fig. 9) with the help of any of the 12 Colour stains.



Figure 9 : Colour Stains

Foundation Shade Stains / Shade Stains

Superficial application of the basic stains, which correspond to the shade groups of the Vita Classical shade system (A, B, C, D) and the Red Shift shade group of the Shofu NCC System, offers the additional advantage of a distinct three-dimensional effect in all-ceramic and PFM restorations (Figs. 10 and 11).

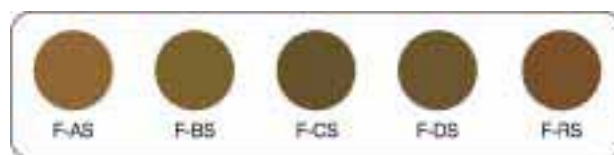


Figure 10 : Foundation Shade Stains



Figure 11 : Shade Stains

Foundation Shade Stains The Foundation Shade Stains are characterised by a lower value and higher opacity, as compared to the Shade Stains, permitting value corrections during internal application (Fig. 12). The chroma and hue of alumina and zirconia frameworks can be adjusted with these internal stains that can also be applied directly onto the opaques of PFM reconstructions.



Figure 12 : Matching the shade of a zirconia framework. A3 shade sample / ceramic coping before shade correction + F-AS (Foundation A-Shade) → A3 shade sample / ceramic coping after shade correction

Shade Stains

Shade Stains can be used to correct the shades of finished ceramic restorations including milled and pressed ceramics. In addition to modifying the chroma and hue of the ceramic surface, it can also be applied on the opaquer surfaces of PFM restorations to match the basic shade (Fig. 13).

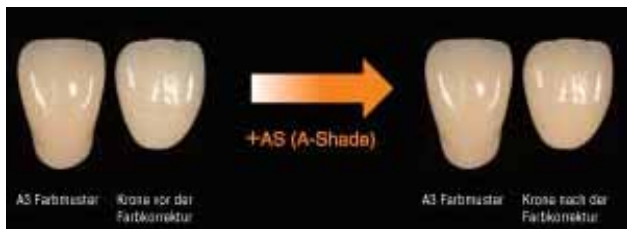


Figure 13 : Using AS (A-Shade) to intensify the A-shade and match the shade sample.

A3 shade sample / crown before shade correction + AS (A-Shade) → A3 shade sample / crown after shade correction

Practical applications...

Interproximal, cervical & occlusal areas

Application to ridges, fissures and cusps: To customise the occlusal surface, small amounts of Orange and Brown are applied to the center of the surface. Dark Red Brown can be used in the fissures with the aid of a very fine brush while White, Orange and Blue help to accentuate the cusps (Figs. 14 and 15). Depending on the individual clinical case, Shade Stains or Khaki can be applied in the interproximal and cervical areas.



Figure 14 & 15 : Using the Orange, Brown, Dark Red Brown and Black Brown stains to match the shades of the central occlusal surface and the cusps and fissures.



Incisal area

To intensify the translucency of the incisal area and match its light reflection, a thin layer of Blue, Grey, Violet or Orange is best applied on the palatal aspect. A stronger colour effect can be attained by applying the paste stains on the labial surface in the incisal area (Figs. 16 and 17).



Figure 16 & 17 : Matching the translucency by labial or palatal staining with Blue, Grey, Blue Grey and Violet stains



Discolourations, hairlines & hairline cracks

Smokers and tea drinkers usually show strong colour effects and discolorations, which can be simulated using Dark Red Brown, Black Brown or Brown stains with a fine brush. These colours are also recommended for the creation of hairlines. The thickness, length or position of the lines is adapted by removing excess stain with a clean brush. Hairline cracks can also be created using White or a mixture of White and Orange (Figs. 18 and 19).



Figure 18 & 19 : Labial and palatal customization using Dark Red Brown, Black Brown, Brown, Orange and White stains.



Staining of pressed ceramics and CAD/CAM crowns

One of the favourable applications of VINTAGE Art Porcelain Stains is in achieving easy and quick shade matching of pressed or milled ceramics, where the results are immediately appreciated. (Figs. 20 to 22). It allows users to create:

- Basic shades with the stains AS or BS
- Incisal effects with Blue, White and Grey
- Cervical effects with Khaki, Brown, Orange Brown or Dark Red Brown

The procedure is completed by applying the fluorescent glazing paste to optimise the natural appearance of the restoration.



Figure 20, 21 & 22: Labial and palatal customization using Dark Red Brown, Black Brown, Brown, Orange and White Stains.

Staining of gingival porcelain

Implant-supported restorations may have to mimic fine nuances in gingival colour. In these cases, customised layering is very time-consuming and often leads to unsatisfactory results. The use of a systematic staining technique can considerably simplify this fabrication process:

The gingiva is layered in two or three basic colours, and then the stains White, Pink, Rose Pink, Wine Red and Pink Orange are used for any patient-specific customisation that may be required. Violet, Brown and Black help to mimic melanin pigmentation or darker coloration in the gingival sulcus (Fig. 23).



Figure 23: Labial and palatal customization using Dark Red Brown, Black Brown, Brown, Orange and White stains.

Internal staining

Mamelon structures and translucency of natural teeth is emulated efficiently by internal staining of the restoration. If there are prominent mamelon structures, the dominance of these sensitive areas can be specifically recreated by applying Mamelon Pink, Mamelon Ivory or Pink Orange and stabilised by firing at 830°C (Figs. 24 and 25).



Figure 24 & 25 : Restored mamelon structure, shown after fixing the stains and completion of the restoration.




Conclusion

Versatile and user-friendly porcelain stains like VINTAGE Art provide unlimited possibilities for creating life-like ceramic restorations. The logically structured, easy-to-follow concept of this comprehensive system offers the option of both internal and external staining, thus enabling the dental technician to modify the restoration at any time (Fig. 26) during the fabrication procedure. With a recommended CTE ranging from 6.0 to 16.0 x 10⁻⁶ K⁻¹, these ready-to-use Vintage ART fluorescent



stains are suitable for almost all high-fusing ceramics, irrespective of whether they are metal-supported or metal-free.

The ultrafine particle structure and convenient pre-mixed paste-like consistency, eliminates the need for a separate mixing step while ensuring a homogeneous application for a more natural aesthetic outcome. Despite numerous innovations in dental ceramic technology in the past decade, porcelain stains still remain a valuable aid to the dental ceramist who is able to match the various nuances in natural tooth coloration effectively by staining the restoration. 

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ABOUT THE EXPERT

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Born in 1960, Mr. Ingo Scholten completed vocational training as a dental technician in 1981, and passed the master dental technicians' exam in 1988. He then worked as a department manager and assistant laboratory manager at a dental laboratory in Duisburg, Germany, for one and a half years.

In 1990, Ingo joined a South German dental company, where he organized and conducted training programs and supported product management and marketing. Since 1991, he has been a technical manager at Shofu Dental GmbH, Ratingen, responsible for product management in the field of laboratory products, supervising and carrying out product training programs and also organizing and conducting national and international seminars. Besides, he closely cooperates with the research and development department of Shofu in Kyoto, Japan.



Figure 26 : Fine accentuation with VINTAGE Art Porcelain Stains helps to create restorations that are indistinguishable from natural teeth (courtesy of master dental technician Bernhard Egger, Füssen).