

# IPS Empress® Esthetic

## Special Edition



A stylized, handwritten signature in white ink, which appears to read 'Jürgen Seger'. The signature is written in a cursive, flowing style.

Jürgen Seger

To me, the dental technology profession is a vocation and a hobby all rolled into one. I love to work restoratively, as it requires an “artistic touch”. Finding the most effective procedure and an optimum solution for each individual case is my constant endeavour, and I try to learn from mistakes and build on experiences.

If you take a close look at restorations in the oral environment, you will become aware that the line between success and failure is very thin. It is my penchant for perfectionism that spurs me and moves me forward as I strive to achieve a natural appearance of restorations and create unique smiles.

Passion is the motor that propels me – the passion to please my patients and myself.



Jürgen Seger  
Trainer ICDE, Ivoclar Vivadent AG, Schaan

# Veneers enhance the quality of your life! !

More and more patients are discovering that veneers are the perfect solution for them.



What is called the "ceramic veneer technique" has become a subject that is increasingly discussed and receives a lot of media coverage in our present life-style-driven society. Many patients desire a beautiful smile and hope to attain a heightened sense of well-being!

Thanks to sophisticated treatment procedures, which are not time consuming and allow conservative preparation methods involving minimal tooth reduction, the veneer technique is becoming increasingly popular. This technique offers a particularly attractive outcome that goes hand in hand with a good clinical prognosis.

## «I have come to realize ...

... that aesthetics, naturalness and beauty are concepts that are **perceived differently** by each individual. >>



Therefore, it is essential to study each patient case carefully and individually.

**Patients should be encouraged to express their expectations prior to the treatment! Ultimately, dentist and dental technician will decide whether they are realistic and can be met by the proposed treatment.**

The following important criteria must be observed by the dental technician:

- Form (smile design)
- Function
- Shade
- Integration into the natural oral and facial environment (harmonious appearance)

These data are essential for the architecture of the dental treatment plan.

# Why use the pressed ceramic veneer technique?



**B**ecause the pressed veneer consists of a high-strength glass ceramic material which ensures a high finishing tolerance.



**B**ecause pressed ceramics exhibit a higher transformation point than layering ceramics. Therefore, as many layering material and stain firings as required may be conducted in the ceramic furnace – without having to use a refractory model!



**B**ecause the lab technician can mimic the shade of the prepared tooth precisely with the die material. This enables excellent control of the shade and brightness during the individual production steps.



# The procedure I use ...

... combines aesthetics, hygiene, function, longevity, rationality and economy. This translates into a particularly efficient production method for the dental laboratory – and a high standard of clinical results for the clinician and patient.

## The first step ... Diagnostic wax-up

I create a visual image of the finished case according to the prescribed criteria by adding wax directly to the pre-operative cast. Sometimes I even remove some stone to create space for the new arrangement of the teeth.

### Tip:

The pre-operative cast as well as the clinical pictures of the initial situation provide valuable guidelines for the new design of the diagnostic wax-up!



## Preparation guide and template for the fabrication of the provisional restoration

The diagnostic wax-up can be used to fabricate further tools that support and guide us during production. I usually recommend fabricating a template as well as various silicone matrices. These tools will be very helpful to the dentist during preparation and when fabricating the provisional restoration.

## Are these tools really necessary?

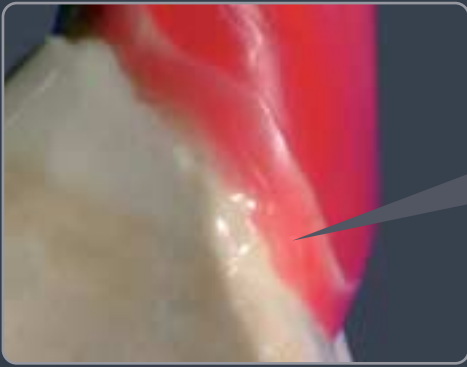
Of course! The preparation is the foundation on which the restoration will be built. If significant changes in shape are made and if diastemas have to be closed or black triangles eliminated, successful results can only be achieved if the preparation design is acceptable.

## The provisional restoration *in situ* – an opportunity that should not be missed!



The provisional offers the unique opportunity to check how well the planned restoration blends into the oral and facial surroundings. This is the right moment to assess the overall appearance together with the patient. If required, adjustments can be made directly using light-curing composite material.

If the patient is satisfied with his/her new smile and appearance, it is advisable to take an impression of the provisional restoration and pour a model. This model will serve as a moulding pattern when fabricating the ceramic veneers.



**Tip:**  
To achieve an optimum fit in the cervical region, I draw the wax beyond the preparation margin. This will ensure that the wax does not detach from the margin during the cooling phase.



## I start modelling the unit in wax ...

... on the **sectional model** with removable dies. Quick completion of the wax-up and an accurate replication of the desired shape based on the provisional restoration is essential.

Silicone matrices, either one or more, which are fabricated using the stone cast of the provisional restoration, are practical aids in accomplishing this task. With the help of these matrices, the desired shape of wax patterns is remarkably easy to achieve.

Before I start to redo the margins of the veneers reproduced in wax and prepare them for investment, I reposition them on the master cast which provides information about the soft tissue situation.



## I assess my wax patterns ...

... on the **master cast**, by checking the soft tissue integration, emergence profile as well as interdental closure.

This step precedes preparing the wax patterns for investment and pressing.



## Selecting a suitable ingot for the planned veneer restoration

The examples proposed in this table are based on my personal experience which usually yields successful results. However, extreme cases may require different solutions.

### Important:

- ✓ The correct brightness value of the final shade is exclusively determined by the ingot material.
- ✓ Masking of a dark tooth stump is usually achieved by using an ingot that exhibits both a high degree of opacity and a low colour intensity.
- ✓ The correct final shade of the veneer is a combination of the stump shade, the ingot material, the layering material as well as the staining procedure.

The main selection criteria for choosing the ingot are the shade of the tooth stump as well as the desired tooth shade.

Tooth stump shade	Final shade				
	Bleach 010 020	Bleach 030 040	110 A1 B1	130 A2	210 A3
St 1	E 02 E 01	E 0C1 E TC0	E TC0 E TC1	E TC1	E TC1 E TC2
St 2	E 02 E 01	E 01	E TC0	E TC1	E TC1
St 3	E 02	E 01	E TC0	E TC0 E TC1	E TC1
St 5	E 02	E 02	E 0C1	E TC0	E TC0 E TC1
St 8	E 02 E 01	E 0C1 E 01	E TC0	E TC0 E TC1	E TC1
St 9	E 02 E 01	E 0C1 E TC0	E TC1	E TC1	E TC2



If two shades are indicated in the table, both are basically suitable; they show only minor differences with regard to opacity and colour intensity.

General assertion ...

... if the **brightness** of the final shade is of primary importance, I usually decide to use the ingot that is indicated first.

... if **colour saturation** of the final shade is of primary importance, I prefer to use the ingot mentioned in second place.

## After divesting ...

... I check the fit of the pressed objects on the sectional model. Subsequently, they are transferred to the master cast. At this point it is worthwhile to further refine the shape of the objects based on the information provided by the gingival contours. Continuously referring to clinical pictures that show the provisional restoration *in situ* may also offer guidance at this stage.

My experience shows that the appearance of pressed ceramic veneers, in contrast to that of veneers reproduced in wax, facilitates visualization of important shape characteristics.

Ceramic material generally demonstrates a brightness and translucency that is comparable to that of natural tooth structure. This allows me to obtain an excellent overall impression of the final appearance.



As far as grinding instruments are concerned, I prefer to use ceramic grinding stones of the latest generation (e.g. Diagen Turbo Grinder / Bredent), as they permit low-vibration grinding of glass ceramic material at low temperatures.

## Contouring and "fine tuning" tips

In order to be able to gain an accurate impression of the shape characteristics that have been incorporated, a reflection of surface light is required in many cases.



Example of a ceramic surface with a dull finish

If ceramic surfaces are dull, the human eye is not capable of identifying important shape characteristics such as marginal ridges, for example. I normally polish the surface using silicone polishers for ceramic materials (medium grit) or apply glycerine gel (e.g. SR Gel) to achieve this shiny effect.



Example of a surface polished with silicone polishers

In contrast to using glazing liquid or water, these methods offer the advantage of providing a consistent lustre, so that all the details of the restoration are perceivable at all times. This considerably facilitates reconstructive work and assists us in our efforts to attain the optimum shape.



Example of a surface treated with glycerine gel

## Silicone matrices for the cut-back technique

### Important:

Before reducing the incisal third, the shape of the pressed veneer should correspond to the final shape of the restoration!

Once the refined shape has been completed, we may "record" it by fabricating a silicone matrix. I usually fabricate both a facial and lingual silicone matrix for this purpose.

I use a scalpel to cleanly cut off the upper part of the facial silicone matrix (down to the middle of the incisal third), while I ensure that the lingual silicone matrix extends up to incisal edge.



Lingual silicone matrix



Facial silicone matrix



Example:  
Precision of the cut-back design can be checked thanks to the silicone matrix



## The cut-back

Now the moment has come for a courageous cut-back, which will ensure the natural appearance of the restoration from within and at the same time increase the translucency in the incisal third. In order to achieve a true-to-nature mamelon effect, irregularities must be incorporated.

Top creative performance is required,  
as every case demands a unique,  
individual touch!



During the incisal reduction I continuously use the silicone matrices as a reference, since they provide safe guidelines as regards the amount of material that must be removed. In this way I make sure to avoid cut-backs that strongly deviate from the proposed design. Exceptional precision is thus guaranteed, which ensures an ideal relationship between internal mamelon structures and translucent areas.

The "prominence level" of the mamelon!

Soft, round contours lead to a classic, unobtrusive appearance, while a pointed, sharp design is usually more striking.



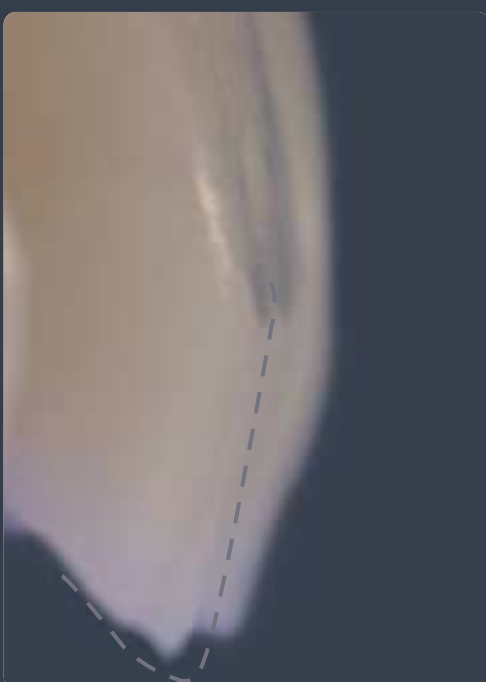
## Translucency and brightness

Since a reduction of the pressed object will not only increase its translucency but also lead to reduced brightness, I try to remove only a small portion of the ingot material, particularly in the lower incisal third.

The most substantial amount of material is removed along the incisal edge, then the reduction height gradually thins out toward the lower incisal third, where reduction is lowest.

### Caution:

During the finishing procedure, I recommend that a minimum thickness of the pressed veneer of at least 0.5 mm be observed in the reduction area.



Example:  
Incisal reduction profile

## Internal characterization using the Wash Pastes

It always surprises me how quickly and easily these effects can be achieved with the mamelon Wash Pastes neutral, low value, high value, MM light-salmon, MM yellow-orange and MM reddish-orange which have been specifically designed for this purpose!



## Nature serves as the model

The Wash Pastes are used to imitate the different internal hues found in natural teeth. However, this must be done cautiously, since most patients will not consider their new teeth to be beautiful if they feature yellow stains and lines.

In this context I would suggest collecting suitable examples of natural teeth whose shade characteristics may be mimicked.

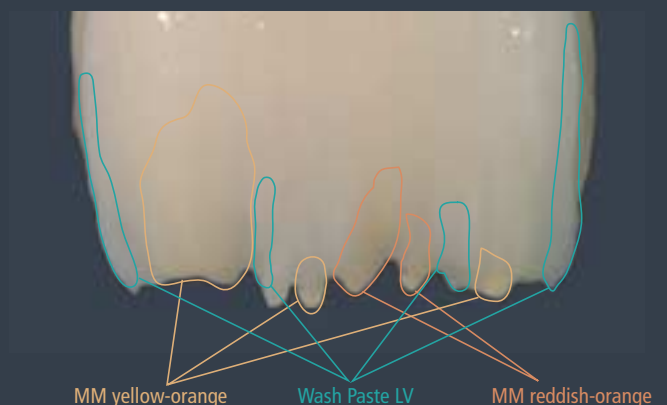


## Application of the Wash Pastes

It is generally safer to choose a moderate colour intensity. In my opinion it is advisable to apply intensive shades in the more prominent areas of the mamelon, while for the remaining mamelon surfaces less intensive or neutral shades are used. Which pastes to use will of course also depend on the shade of the ingot used as well as the desired shade characteristics of the individual case.

As early as during application of the Wash Pastes, we can gain an impression of the shade effect. This enables us to select the correct shade and shade intensity in a highly precise manner prior to conducting the firing cycle in the ceramic furnace, a fact that will contribute to the success of the case.

The outstanding characteristics of the Wash Pastes permit us to tackle the delicate task of fabricating aesthetic veneers in a courageous and self-confident way.





Examples: After wash firing, the objects already possess an exceptionally brilliant and vibrant surface finish.

## Internal light reflection and absorption areas

The intricate pattern of light and shadow produced by these areas imparts a unique character to the natural tooth. Therefore, it is essential to pay attention to these areas when the Wash Pastes are applied. Effects of this kind may be achieved using the Wash Pastes High Value and Low Value.

I apply only small amounts of these materials and try to imitate the very subtle effect of this interplay of light and shadow in the natural models.

Possible areas of application for Low Value pastes are along the sides of the mesial and distal ridges as well as in the upper incisal third between the mamelons, if required.

The High Value paste may be directly applied onto the mesial and distal ridges as well as in the centre of the lower incisal third.



Veneer restoration after wash firing: For this case, the Wash Pastes Low and High Value were used.

### Low Value:

Shades that appear bluish-purple absorb the largest amount of light and thus produce a depth effect but low brightness levels.



IPS Empress Esthetic Veneer Wash Paste LV

### High Value:

Shades that appear whitish-cream reflect the largest amount of light and thus produce high brightness levels but no pronounced depth effect.



IPS Empress Esthetic Veneer Wash Paste HV

## Build-up using the Incisal Opal materials

I start building up the incisal area at the mesial and distal ridges. Normally I use an Incisal Opal material that demonstrates a lower translucency, such as Incisal Opal Low Translucent or Incisal White. To achieve a contrast, I then place Incisal Opal High or Medium Translucent at the incisal centre.

The elegant appearance of the restoration largely depends on the creation of smooth transitions between the different layers. Thus I use a brush to smooth out the material applied first along the margins.

After the **first** incisal firing cycle, the attained result is assessed with regard to the "interplay of light and shadow". If required, adjustments and additions can be made with the second firing.

With the **second** firing, suitable incisal materials are applied to the veneer. To complete the incisal form and create the so-called "halo effect" I use Incisal Edge material. This is applied directly to the incisal edge and usually extends from the mesial to the distal contact area.

It is sufficient to create a build-up that is only slightly enlarged in shape as shrinkage will be minimal due to the small amount of ceramic powder applied.

### Tip:

The lingual silicone matrix can also be used as a moulding pattern during the layering procedure. Simply apply ceramic separator to the matrix first and thoroughly disperse with air!



## Incisal firing characteristics

After firing, the ceramic should exhibit a fine-grain surface structure. Insufficient firing usually produces a low brilliance in the ceramic as well as a low surface density that leads to porosity.

These characteristics, which are visible when inspecting the fired object, assist in evaluating the quality of the firing procedure. Many ceramic furnaces demonstrate properties that are specific only to them. As a result, the firing parameters should be adjusted based on the individual requirements.





Final shape after contouring with diamond burs



Marginal ridges that have been smoothed with silicone polishing wheels



Detail of the situation



## Surface texture before stain and glaze firing

Prior to the stain and glaze firing cycle, I normally finish the surface with sintered diamond burs and silicone polishing wheels. These instruments are used to create shape characteristics such as concavities and convexities and to adjust the contours of the marginal ridges.

Subsequently, I apply micro-/macrostructural features to the surface and smooth the prominent areas using silicone polishing wheels.

### Caution:

Surface areas that are treated with silicone wheels exhibit hydrophobic properties. This makes homogeneous staining impossible.

**Tip to avoid this problem:**  
Apply ceramic or pumice powder and spread with your finger!



## Application of stains / stain firing



### Assessment of colour saturation

If required, the chroma can be increased by thinly applying IPS Empress Universal Shade materials.

### Important:

These materials are fired onto the surface prior to glaze firing by conducting a fixation firing cycle in the ceramic furnace.

## Partial glaze firing

I apply IPS Empress Universal Glaze in sections. In areas where no ceramic layering materials (sintered ceramics) have been used, a layer of glaze is required to achieve the necessary lustre of the pressed part of the veneer.

After glaze firing, the sintered ceramic surface in the incisal area will exhibit a natural lustre.

The veneers will have a balanced shade effect and translucency once the glaze firing cycle is completed.

The shades achieved perfectly match those in the shade guide. This is due to the fact that the dies fabricated with the available die material reliably simulate the shade of the prepared tooth and enable ongoing shade control.



## Mechanical polishing

I smooth the curvatures of the restoration according to the individual requirements using pink polishing wheels. Subsequently, I polish those areas that require the highest lustre using wheels for high-gloss polishing. It is important to exert only little pressure and work with utmost care to ensure that delicate details such as the surface structure and the marginal ridge profile are maintained.

# The result:

Enhanced brilliance and elegance!



# Aesthetic results with



## Patient Case 1

Pre-operative situation



Result



Upper veneer restoration extending from tooth 15 to 25

# IPS Empress Esthetic

## Patient Case 2

Pre-operative situation



Upper veneer  
restoration extending  
from tooth 16 to 25



Detail of the situation



# IPS Empress Esthetic





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