

Zirkonzahn®

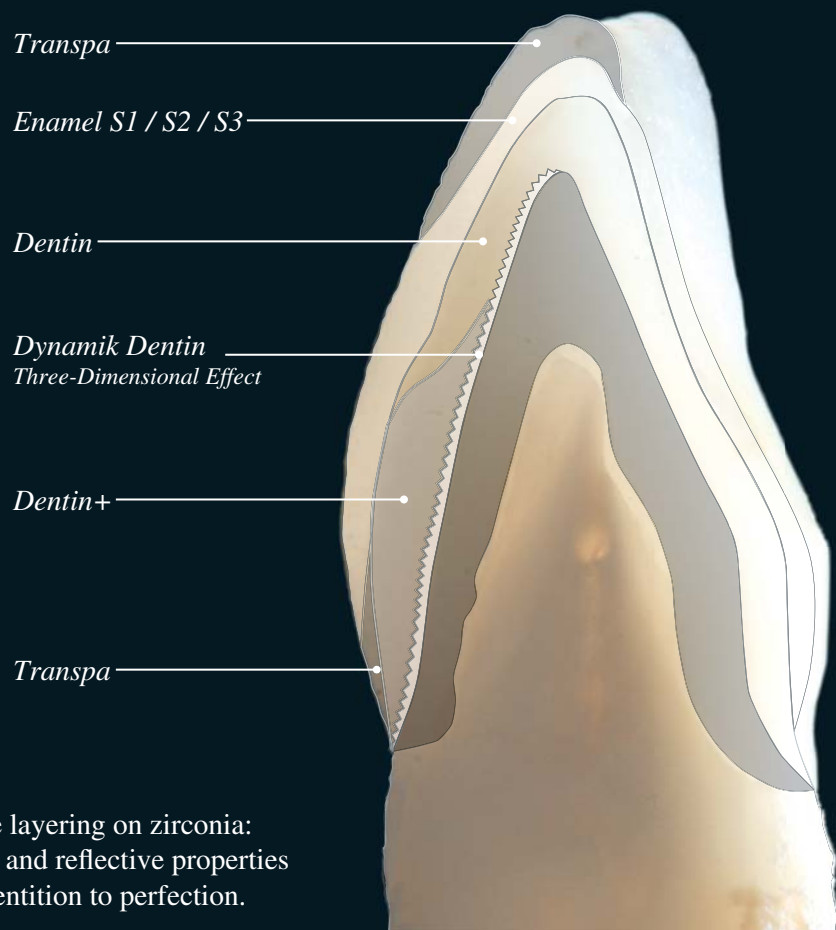
Human Zirconium Technology



DYNAMIK DENTIN

ICE Zirconia Ceramics





Cross section thru Bio-effective layering on zirconia:
Light absorption characteristics and reflective properties
are employed to copy natural dentition to perfection.



Cristiano Broseghini

Thanks to the development of various porcelain layering techniques natural looking ceramic restorations have been achievable for a long time. In recent years, layering porcelain onto zirconia has brought technicians, dentists and patients a big step forward. The extraordinary properties of zirconia concerning durability, aesthetics and bio-compatibility have allowed significant improvements not only to mechanical qualities of our restorations. We are also seeing effects of light transmission & reflection identical to nature.

Bio-effective layering not only helps produce natural looking shades and colours but aims to copy natural dentition in its entire complexity. The dentin core's three-dimensional effect, its depth and various opacities at several levels need to be mimicked.

The expansion of the 'ICE Ceramics' veneer ceramic system with 'Dynamik Dentin' is based on the idea of combining dentin layers of varied light-optical qualities to copy changing degrees of opacity as they occur in natural dentin.

The Dentin Ceramic system consists of Dynamik Dentin, Dentin+ and regular Dentin.

Dynamik Dentin is the first layer applied. Natural light diffusion, chroma and fluorescence of the restoration are supported by the matching opacity and colour of Dynamik Dentin.

With a combination of Dentin+ and Enamel the dentin core is recreated in depth and structure. True depth and three-dimensional effects can only be achieved by a well balanced multiple-layer concept - the way technicians inspire 'life' into their creations.

The professional ICE Ceramic system gives technicians the tool to achieve the next higher standard of excellence.



The border area between tooth and soft tissue plays an interesting and important role in every reconstruction: This section, characterized by its brightness and depth, is vital for the success of the restoration.



Example of Bio-effective layering on a live case: Original situation



Case reconstruction with 4 zirconia crowns: Frame preparation



Frame after Dynamik Dentin fire



Establishing tooth morphology



Low translucency – much depth

Pronounced three-dimensional effect



The three materials: Dynamik Dentin, Dentin+ and regular Dentin.

When using only one single dentin material with uniform reflective properties the end result will be a somewhat flat looking shade. Natural teeth owe their appearance to multiple layers with varying opacity. This needs to be considered when layering ceramics.



The 3-layer combination of Dynamik Dentin, Dentin+ and regular Dentin achieves the desired natural light-dynamics.



Add enamel and the Bio-effective build-up is complete: A nature-like crown is born.



First a thin wash layer is applied over the zirconia frame and fired at high temperature to create maximum bond between frame and ceramic.



Wash bake result fired at 910 C – Holding time 2 minutes



The whole frame is covered in a layer of Dynamik Dentin.



After condensing, the surface is roughened with a brush.



Surface after Dynamik Dentin fire: Ideal texture for light diffusion.



Lingual part of frame.



Live case sample of a zirconia restoration: Original situation



Biscuit bake try-in: Note transition from ceramic to soft tissue in the cervical area



Dynamik Dentin placed at the cervical area and ready for the next step. Optimal surface texture and chromatic differentiation are clearly visible.



Next, a thin layer of regular Dentin and Enamel is added. Use Dentin+ for the interproximal areas. These layers are kept rather thin because of the underlying supportive effect of Dynamik Dentin.



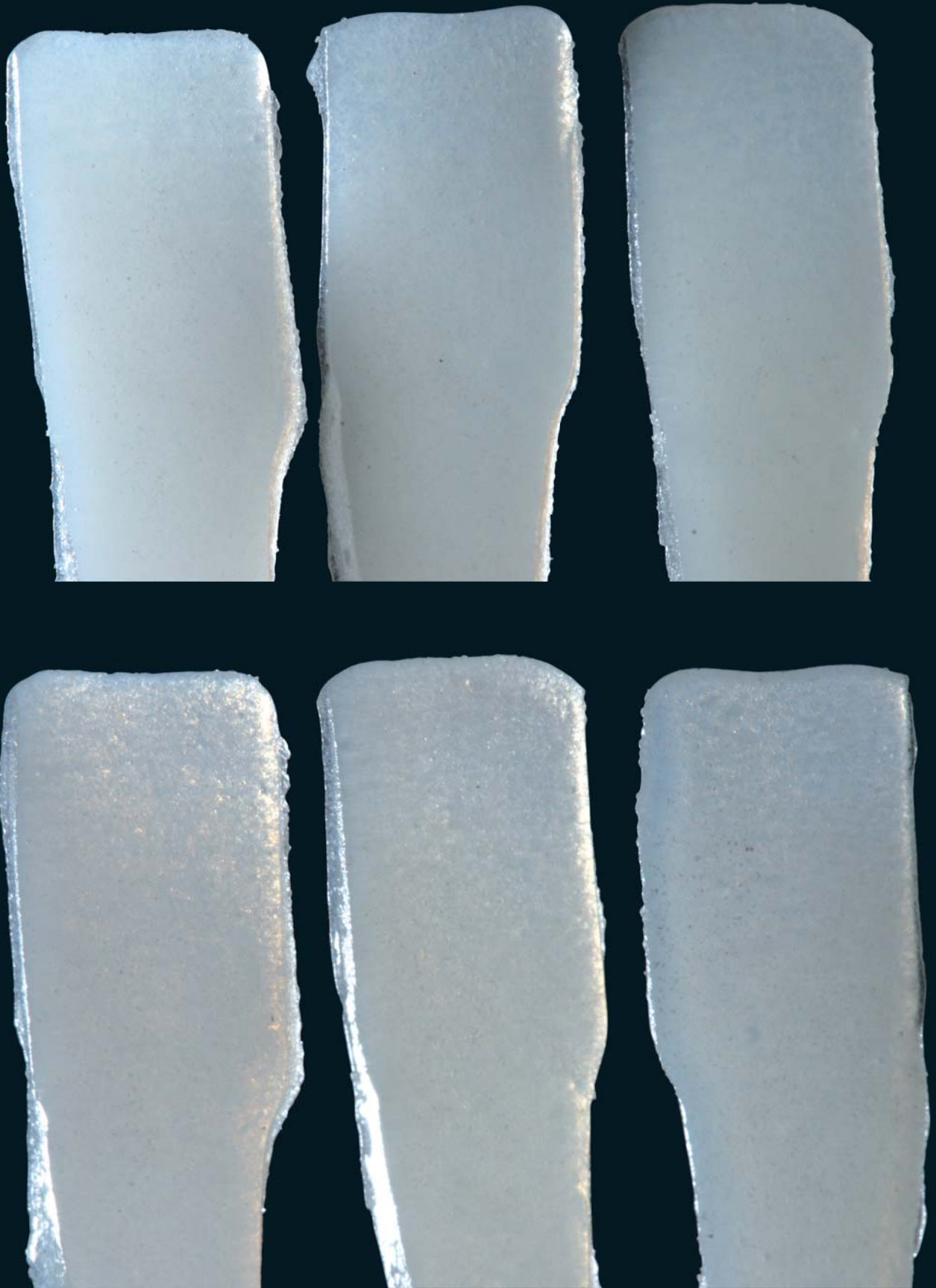
Then follows a thin layer of Transpa ceramic.



The final anatomical form is completed with Enamel.



Result after the 1st bake.

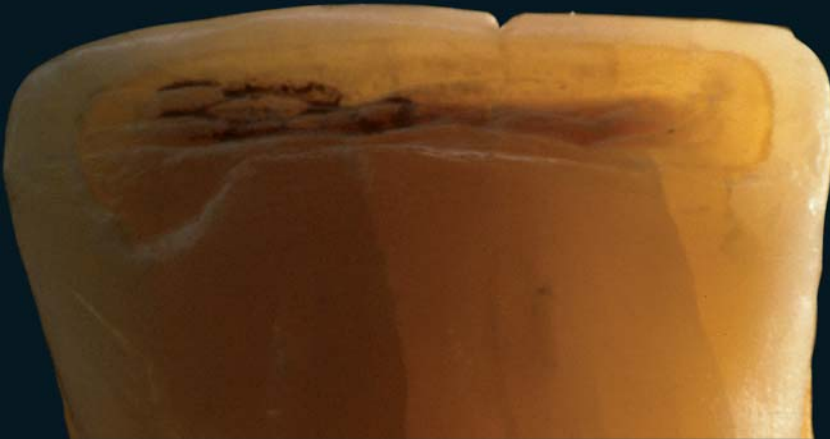


The three main Enamel materials used already display good, perfectly adequate opalescence. There is no need to add further extra opalescent materials to the restoration.

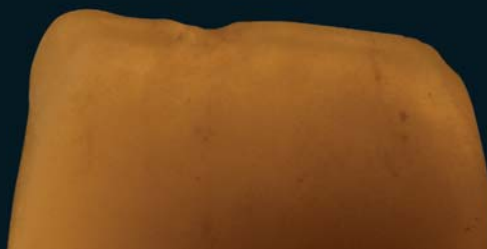
Effects of natural teeth...



Natural dentition



Natural dentition



Ceramic



Ceramic

The Enamel materials' opalescent effect is comparable to natural dentition



The Dynamik Dentin System covers all shades needed for the Vita Colour scale.



In addition Intensive shades are available to produce depth in incisal areas.



The use of pink Dynamik Dentin cervically and incisally produces the depth desired in those areas.



Incorporation of Dynamik Dentin Intensive shades generates enhanced contrast which leads to a natural aesthetic appearance.



ICE Zirconia surface stains may be mixed with Dynamik Dentin for unlimited creative scope.





Reproduction of different tooth shapes – the natural effect of depth and three-dimensional appearance is evident.



Dynamik Dentin, Dentin+ and regular Dentin used in combination create distinct natural light dynamics.



Restorations with different incisal edges showing natural effects and pleasing opalescence.



Bio-effective layering aims to copy the different levels of natural dentition and create a complex yet overall harmonizing picture. Each layer affects the next in light reflection and brightness which gives the zirconia restoration the desired light-optical appearance. In this way the zirconia frame itself becomes part of the chromatic structure.



Various samples shown from buccal and lingual angles.



Clinical situation prior to cementation



Clinical situation - temporized 11 – 12
– 21 – 22



Final restoration one month after issue (clinician Dr. Mauro Broseghini and Dr Piero Dell'Acqua – Oral Harmony)

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