

Heraeus Kulzer
Mitsui Chemicals Group



heraCeram®
Simply Perfect.

WELCOME

Optical and technical perfection is all that you need to place the power of your creativity into your own hands. That is HeraCeram; a range of dental ceramics perfectly engineered and designed with you the technician in mind. Easy, simple, reliable, no worries! Whether it's for your everyday A to D restorations or for the creation of a high end masterpiece, HeraCeram has it covered. **Visually stunning yet strong consistent and predictable with all that it achieves. Simply perfect.**

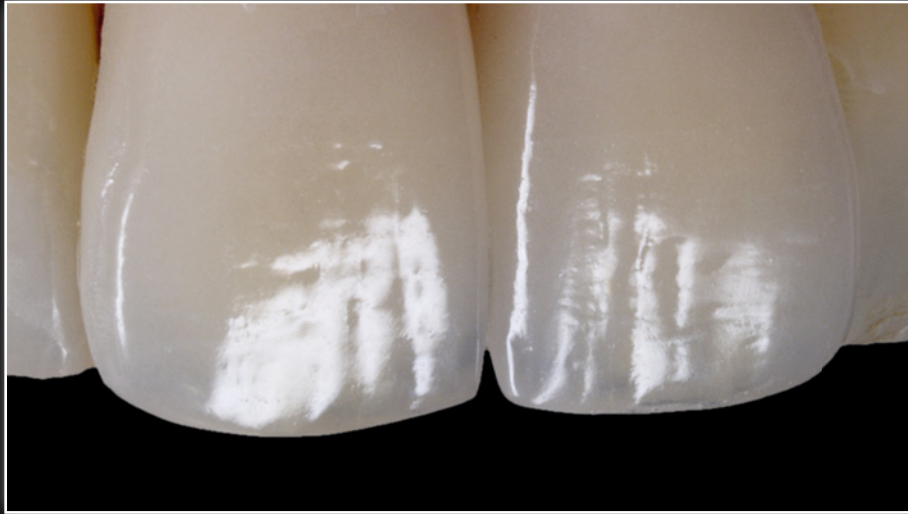


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Aesthetics and efficiency

It's easy with HeraCeram



COMPLETE CERAMIC

for all that you do

Natural looking restorations on any alloy or zirconia framework. A range of ceramics matched with identical optical and technical properties. That means easy, reliable and time saving processing with optimised aesthetic results. All components within the HeraCeram range are ideally matched to their specific framework material. HeraCeram for traditional metal bonding alloys and Heraceram Zirconia for Zirconia Oxide frames. **The benefit: Standard firing programmes and processes, identical aesthetics irrespective of the framework. Simple, easy. Perfect.**



OPTICAL AND TECHNICAL PERFECTION —

High purity synthetic quartz glass

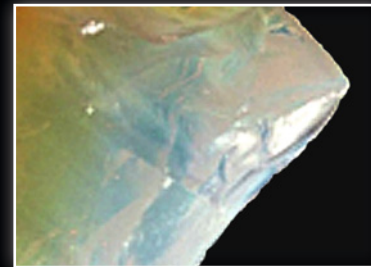
Quartz glass (SiO_2) is an integral part of all dental ceramics and plays a functional role. However, the purer the quartz glass, the better the optical properties.

Our specialised quartz glass is totally unique within dentistry. It is the only dental ceramic manufactured today, that uses pure Synthetic Glass. Indeed the very same glass made by Heraeus Kulzer is used to construct fibre optic and data cables. That means faultless design and performance. Synthetic manufacture ensures that HeraCeram ceramics provide not only perfect and consistent high quality, but also identical aesthetics.

The purity of synthetic quartz glass provides unique, internal true opalescence and fluorescence. This ensures that every HeraCeram restoration achieves a natural and fully dynamic appearance.



Take a look at the natural quartz crystal. See how the light is dispersed. Pure synthetic glass by Heraeus Kulzer is completely different. See how synthetic glass appears transparent and pure. Optically perfect!



Synthetic Quartz Glass.
Purity of translucency and Opalescence.

TECHNICALLY PERFECT —

with Stabilised Leucite Structure (SLS)

All HeraCeram ceramics are able to combine time saving processes with the highest levels of stress resistance. This is due to what we term as Stabilised Leucite Structure or (SLS). All ranges of HeraCeram including Zirkonia contain micro-fine Leucite particles which substantially reduce the susceptibility of chipping and fracture. So less stress in the restoration and also less stress for you! The secret behind our SLS formula is its composition combined with a specialised production process. The combination of balanced Leucite crystals and specialised manufacturing prevents an uncontrollable rise in the coefficient of thermal expansion during firing. So no matter if the ceramic is bonded to metal or to zirconia oxide there will be less stress meaning less failures.

Because of the SLS formula, HeraCeram ceramics are extremely robust and can be fired quickly, efficiently, reliably and consistently. A huge range of benefits that should satisfy every dental technician.

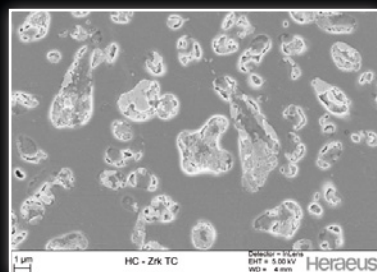
- Extremely short firing cycles as the starting temperature is 600°C.
- High heating rate (100°C/min)*
- Low firing end temperature (880°C max.)
- No special cooling phase required **
- Reduced firing shrinkage
- Stabilised coefficient of thermal expansion, even after multiple firings
- Protection against chipping and cracks

* Our recommendation is 100°C/min but if you prefer a longer heating cycle, no problem.

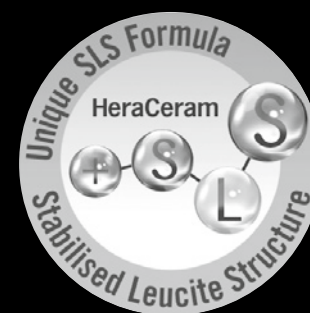
** Follow technical guidelines and instructions by your preferred alloy manufacturer.



This shows a typical Zirconia Oxide veneering ceramic without the inclusion of Leucite.



See the difference – HeraCeram Zirkonia with its crack inhibiting Stabilised Leucite Structure. Technically perfect!



HERACERAM — for traditional metal bonding alloys

HeraCeram is the perfect choice for veneering traditional Metal Bonding Alloys within a CTE range of 13.5–14.9 $\mu\text{m/mK}$ due to low firing temperatures of 880°C max. All alloys in this CTE range can be processed reliably with HeraCeram.



NP-PRIMER —

the perfect foundation for safe veneering

With the new HeraCeram® NP-Primer, non-precious metal frameworks can be reliably conditioned for ceramic veneering with HeraCeram, saving you time. The NP-Primer prevents uncontrolled formation of the oxide layer on the non-precious metal alloy surface. An optimal foundation for long lasting aesthetic veneers.



HERACERAM ZIRKONIA — for zirconium oxide frameworks

Zirconia Oxide frameworks have a CTE of $10.5 \mu\text{m/mK}$. The formula of HeraCeram Zirkonia is perfectly optimised and designed to match all Zirkonia frameworks achieving the highest levels of physical and mechanical strength. Our Stabilised Leucite Structure protects against crack propagation chipping and fracture, a recognised problem with some other Zirkonia ceramic systems. HeraCeram Zirkonia with its SLS formulation gives you proven reliability exactly when and where it's needed.

HeraCeram Zirkonia Paste Adhesive is specifically developed for zirconium oxide veneering. It will ensure a maximum bond between the veneering ceramic and the zirconia framework. No need for risky sandblasting of the sensitive zirconium oxide surface.

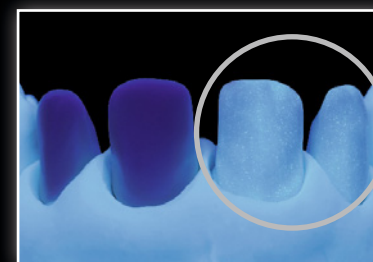


The adhesive firing process has three functions:

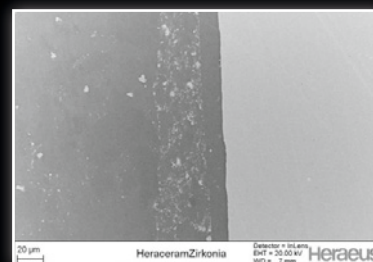
- Cleansing of the Zirkonia framework
- Realisation of an extreme adhesive bond due to optimised wetting of the zirconium oxide surface
- Provide internal fluorescence for a more natural appearance.



Zirconium oxide copings with adhesive show a high surface luster after firing.



The fluorescent effect of the Adhesive becomes visible in ultraviolet light.



Micrograph of Adhesive on ZrO_2

HERACERAM ZIRKONIA 750 —

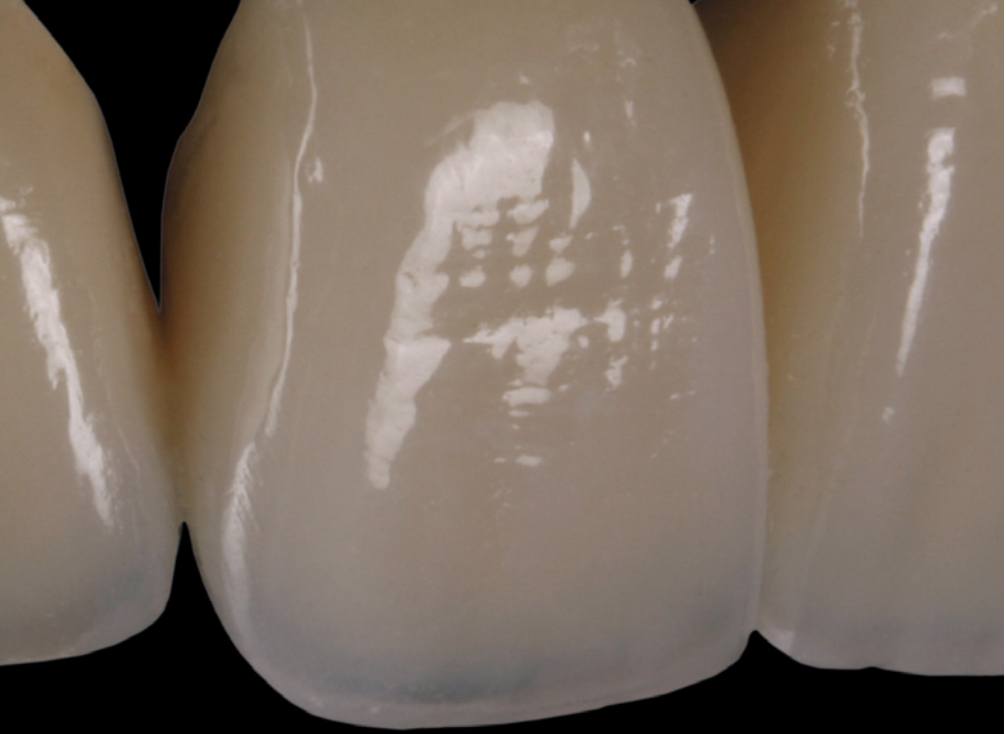
our new enhanced ceramic for use on Zirkonia Oxide and Lithium Silicate structures and frameworks.

Combining the robustness and reliability of proven SLS technology, HeraCeram Zirkonia 750 is also perfectly adapted to the specific physical properties of Lithium Silicate making it your ideal material of choice. With its new highly specialised adhesive, providing world beating bond strength, physical bonding is maximised at 750°C for Lithium Silicate and 800°C for Zirkonia.

HeraCeram Zirkonia 750 is fully aligned with our current ceramic portfolio which offers a wide range for choice and application of all types of ceramic restorations.

- PERFECT AESTHETICS — synthetic quartz glass in its purest form provides HeraCeram Zirkonia 750 with optimised optical properties.
- RELIABLE — SLS formulation protects HeraCeram Zirkonia 750 against cracking and chipping offering maximum reliability for zirconium dioxide and lithium disilicate restorations.
- EFFICIENT — One ceramic designed for two different framework materials.





Every day restoration



Matrix restoration

AESTHETIC CHOICE

Made for you and perfectly suited to realise your aesthetic needs. Aesthetics are yours to achieve following the guidelines of needs and expectations for client and patient. No matter how or where you work you need the assurance that for every aesthetic situation you will have the answer. Whether producing A–D shaded restorations using standardised layering techniques or producing sophisticated high level customised shades for the most demanding of patients, it's all at your fingertips with HeraCeram ceramic. **Optical perfection.**

Stunning aesthetics easily.



YOUR EVERYDAY RESTORATION A-D SHADES

It's so easy. Within every dental laboratory strict routine becomes more and more important especially when you need to produce classic A-D shades reliably, quickly and in a more efficient way. With HeraCeram it's easy to reach your ideal standard consistently time after time. **Reach your goal, exceed expectation.**

SIMPLIFIED LAYERING A-D SHADES —

easy and economical

Following simplified guidelines for layering you are able to achieve a consistent reproduction of classic A-D shades. The ceramic is modelled using two or three layers, depending upon your preference, offering a quick and uncomplicated procedure.

*VITA Classical is a registered trademark owned by VITA Zahnfabrik, Bad Säckingen.

VITA CLASSIC A3

Simplified layering with
HeraCeram





EVERYDAY RESTORATIONS A-D – LAYER BY LAYER



Dental surgeon and photo by Ulf Krueger-Janson, Germany

Restoration by MDT Paul A. Fiechter, Germany



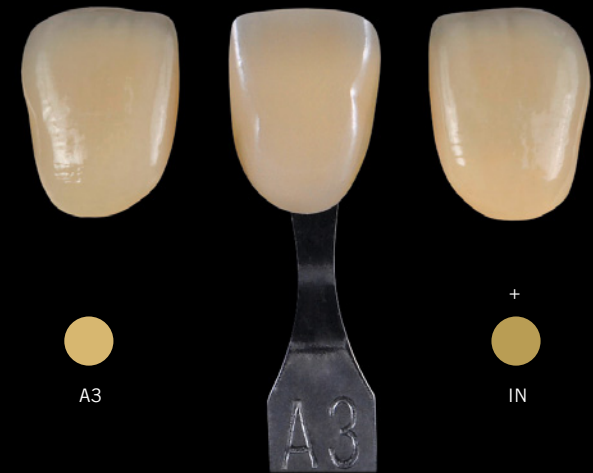
PERSONALISED

The next level. With HeraCeram ceramic there is always a solution. What can you do to create a distinct characteristic or produce a restoration where there is little room for ceramic but the shade is of paramount importance? With a ceramic system you need the flexibility to work around a problem without compromise. If the basic shade of a tooth is classic A-D but you need to change the appearance without affecting the shade there can be no room for deviation. **We provide a range of ceramic designed to help create a more personalised restoration allowing you to express your creativity but defining the expectations of the patient.**

INCREASER —

Better colour with less space

HeraCeram increasers (IN) allow you to customise but control every aspect of chroma. 16 chromatised, dentines are available in shades A1-D4 which provide greater control of shades even if the available space is critically low. For example at the cervical area, or for the concealment of framework structures toward the incisal area.



simplified layering without increaser (left) and customised with increaser (right)

HERACERAM INCREASER



to intensify the chroma in the cervical area





for intensification of the basic shade



for concealing and correction of the frame structure

IN A1	IN A2	IN A3	IN A3,5	IN A4	IN B1	IN B2	IN B3	IN B4	IN C1	IN C2	IN C3	IN C4	IN D2	IN D3	IN D4

For distinct characterisation and customised modification there are six other high chroma modifiers available in the following shades; Solaris (INS), Peach (INP), Mango (INM), Orange (INO), Caramel (INC) and Taiga (INT).

					
IN Solaris	IN Peach	IN Mango	IN Orange	IN Caramel	IN Taiga

sample board of the individual increasers



MASKING —

providing depth

Balancing the level of translucency whilst maintaining the effect of depth within a restoration is often hard to achieve. To overcome this problem and to make life a little easier we have devised a simple but effective solution. Specialised masking materials are applied between the dentine and the Incisal layer which help to conceal underlying frameworks. Depending upon the choice of Mask, you are able to customise appearance by regulating the level of fluorescence.

- MA bright has a higher level of opacity with increased fluorescence that helps to achieve a more youthful look especially with lighter shades (A1, A2, B1, B2, C1, C2)
- MA shadow has a higher level of opacity and reduced fluorescence to achieve an older look with darker shades (A3, A3.5, A4)

HERACERAM MASKING EFFECT

Samples are also shown in ultraviolet light.



bright



shadow



ENHANCER —

Customised value and brightness

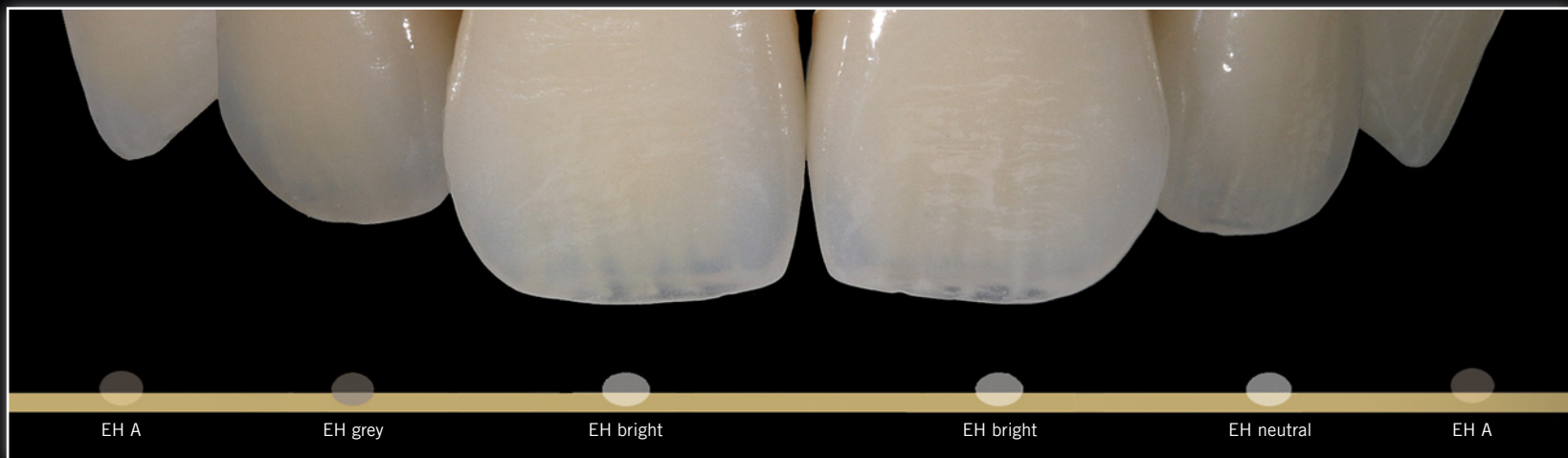
With HeraCeram enhancer components (EH) it's possible to adjust the value or brightness of the restoration whilst the nature of the required shade remains unaffected. Correct application during the layering process means that the shade stays intact.

- EH A-C enhances the required shade.
- EH neutral compliments areas without influencing the shade. For example at contact areas or vestibular additions.
- EH bright adjusts the taint of the basic shade to create lighter areas.
- EH grey adjusts the taint of the basic shade to make it more grey whilst reducing its brightness.

You have the capability to take full control of any shade deviation. Its so easy.



EXAMPLE OF USE





Dental surgeon and photo by Ulf Krueger-Janson, Germany
Restoration by MDT Paul A. Fiechter, Germany





CUSTOMISED EFFECTS – LAYER BY LAYER





Dental surgeon and photo by Ulf Krueger-Janson, Germany
Restoration by MDT Paul A. Fiechter, Germany

MATRIX

EXCLUSIVE AND UNIQUE. Unlock your potential and create a restoration like no other. Understanding the interaction of light within natural teeth catching its essence and translating what was found into dental ceramic inspired our Matrix concept. To understand optical dynamics and light play specifically related to highly individualised characterisation has again been simplified. Every effect can be achieved using minimum layering and adopting techniques using specialised powders. **Fluorescence, opalescence, transparency and brightness are adjusted on a patient specific basis to capture nature perfectly.**

MATRIX PHILOSOPHY —

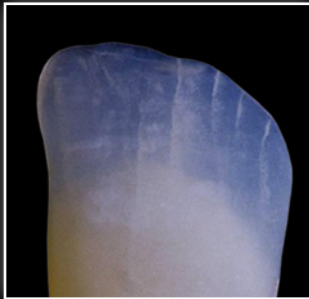
The definitive understanding of aesthetics

Only a complex interaction of translucency, opalescence, fluorescence and brightness gives the natural tooth such a dynamic appearance. These four optical properties depend on the structure of the tooth. Their dynamic play of light varies within the tooth. The path of light is even directed by minute imperfections within enamel and dentine. With HeraCeram matrix every dental technician can reproduce this dynamic appearance in a lifelike manner, down to the smallest of detail.

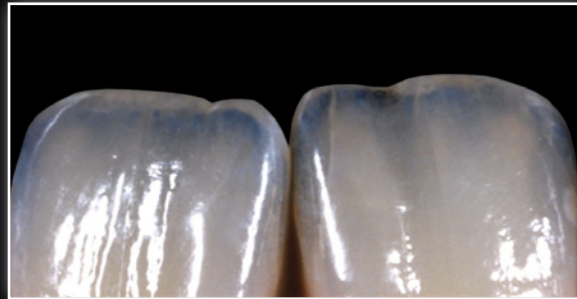
Close collaboration with Paul A. Fiechter, Master Dental Technician, has enabled Heraeus Kulzer to analyse the complex dynamic play of light within a

tooth and discovered that the aesthetic principle has an impressively simple blueprint: Matrix powders are like a set of instructions designed to achieve natural behavior with light and colour. Natural teeth are true wonders of nature. They adapt within their environment to ever changing light conditions. That's exactly what happens to matrix ceramic as it reacts to conquer every optical challenge.

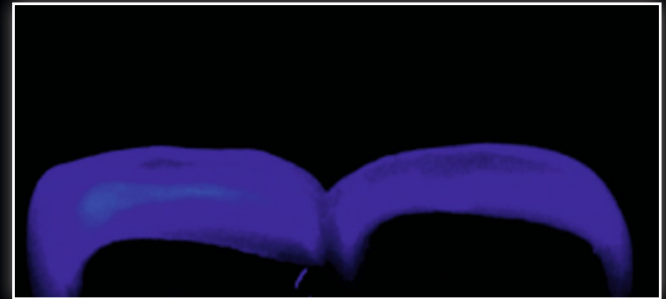
With HeraCeram matrix ceramic individualised natural aesthetics are no longer a rare work of art. Every aspect related to true aesthetics is now fully achievable for everyone.



Opalescent transpa material by reflecting light



Dynamic light effects of the natural enamel



Individual creation of the fluorescence within the Matrix layering structure following natures guide.

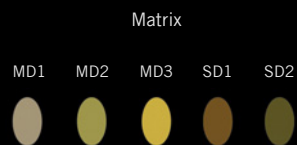


MAMELON AND SECONDARY DENTINE —

balanced chroma and fluorescence

Mamelon (MD) and secondary dentine (SD) optimally balance out chroma and fluorescence. As with natural teeth, opacity is controlled by fluorescence. Intensity and luminosity can be altered to control shades internally including the cervical area.

SAMPLE BOARD MAMELON AND SECONDARY DENTINE



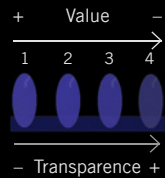
VALUE —

brightness under control

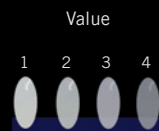
With high fluorescence value (VL) ceramic you are able to take full control of the brightness in relation to the chroma of the individual shades.



DESCRIPTION OF THE VALUE MATERIALS

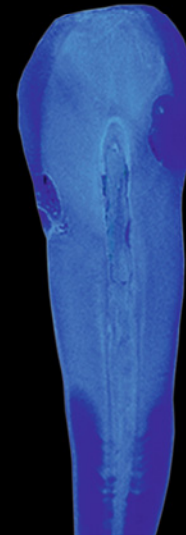


Influence of the fluorescence on the transparency



VL1 for: A1, B1, C1
VL2 for: A2, B2, D2
VL3 for: A3, B3, C3, D3
VL4 for: A3,5, A4, B4, C4

Illustration of the correlation between the transparency and the brightness of the Value materials



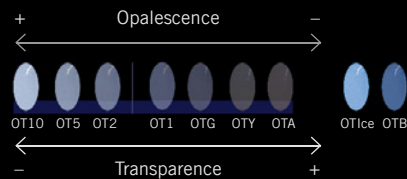
OPAL —

true natural incisal

As light travels through natural teeth we can detect its interaction especially at the Incisal area. It is here that we see opal and its effect alongside transparency. To create opal effects opal incisal or opal transpa material is added when nearing completion of the anatomical shape. To cover every situation opal transpa is available with ten different degrees of transparency.

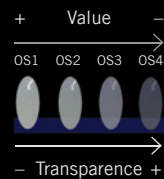


INTERACTION BETWEEN OPALESCENCE AND TRANSPARENCY

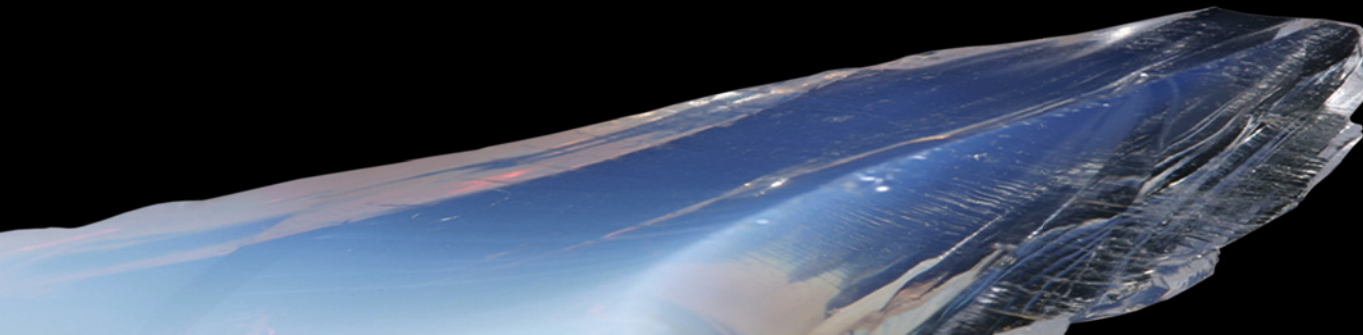


OT1–OT10: the higher the intensity of the opalescence the lower is the transparency.
All coloured OTs (OTY; OTA; OTG; OTB; OTIce) have the same degree of transparency

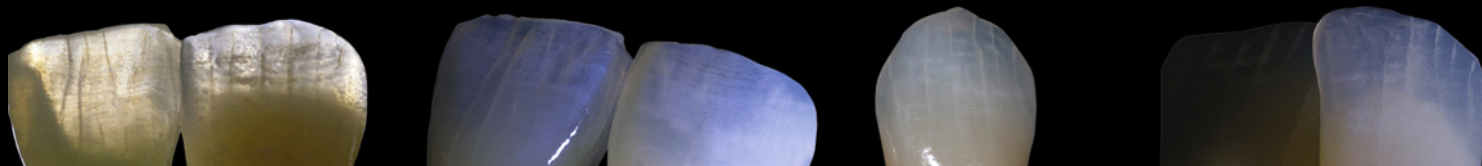
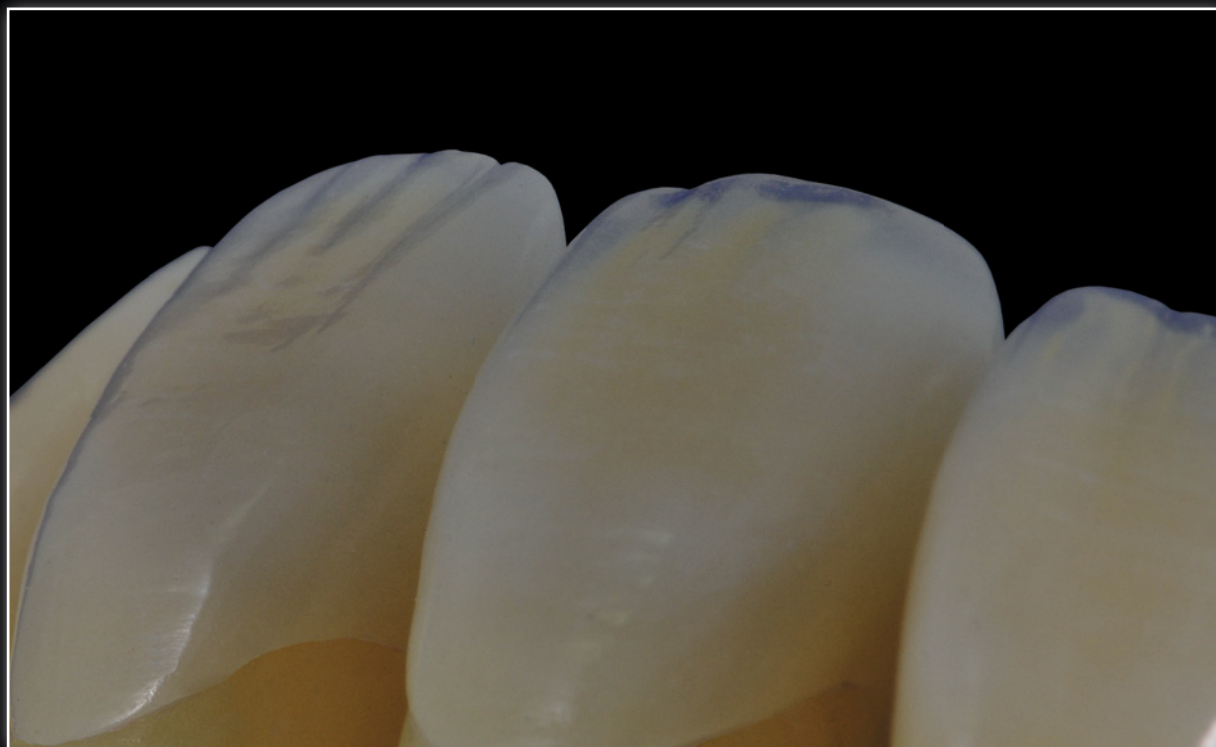
INTERACTION BETWEEN TRANSPARENCY AND VALUE



OS1–OS4: the higher the value of the opalescent incisal the lower is the transparency



OPALESCENT TRANSPA MATERIALS

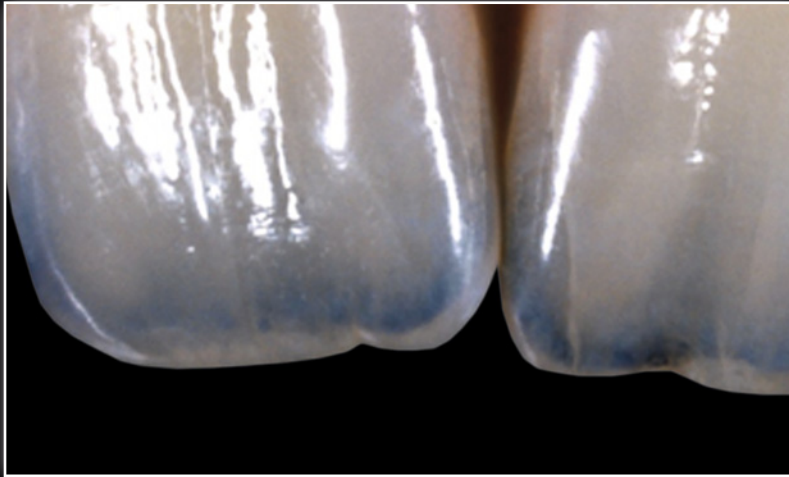


CHOOSE THE RIGHT SHADE —

achieve every objective

Careful shade taking and precision assignment of ceramic constitutes the base for true patient oriented reproduction of optical properties. What is not perceived at the beginning cannot be layered later.

Paul Fiechter, Master Dental Technician, shows how you can achieve the desired shade effect with the HeraCeram matrix shade analysis.



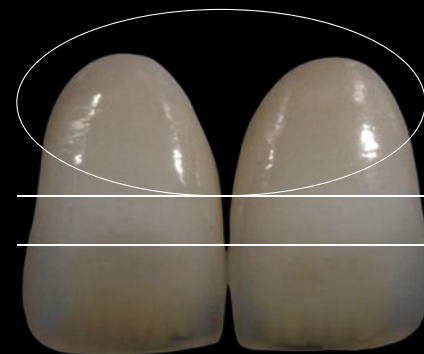
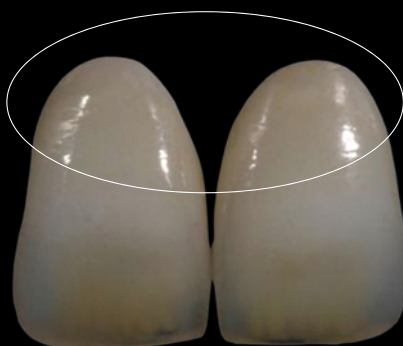
Shade sample A3 tends to look two dimensional compared to crowns with customised layering or natural teeth. With the shade sample the dental technician can, at best, assign the basic shade (hue) or the brightness (value). By contrast, natural teeth are much more complex (different levels of brightness, transparency and chroma, e.g. in the mamelons). For a shade analysis of the many different natural tooth structures it is neces-



sary to have a certain amount of knowledge of the interaction of optical phenomena that chiefly determine the vitality of the natural dentition. The various modules of the matrix system and their natural optical dynamics exactly match the parameters that have to be assigned by an observer during custom shade taking.



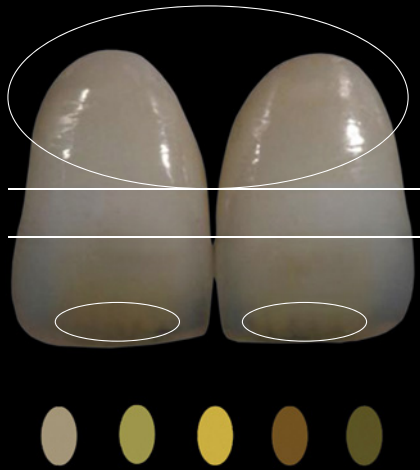
Classification of the basic shade



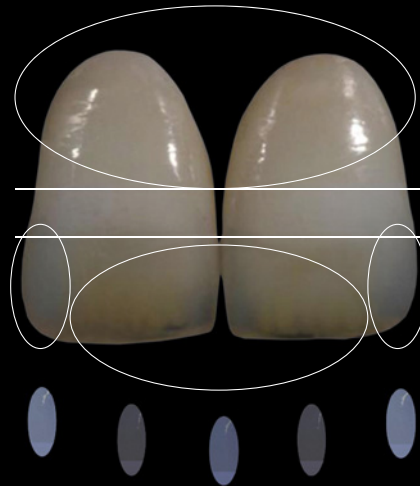
Identification of the several values. Clearly visible the bright ribbon in the middle third of the tooth. Towards the incisal the value is reduced.

CHOOSE THE RIGHT SHADE —

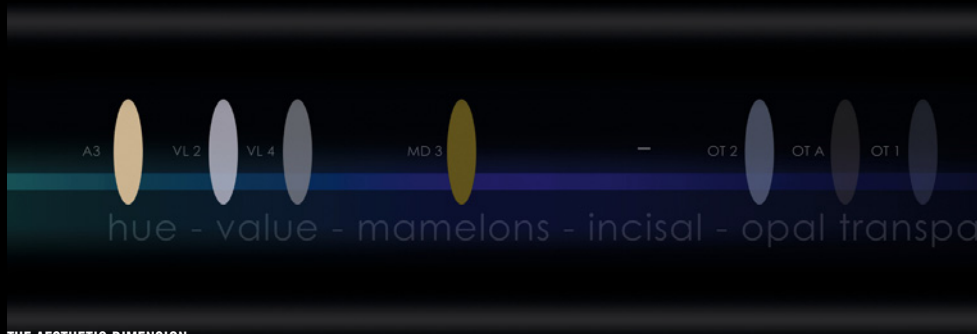
achieve every objective



Identification of the mamelon shade and structure



The brighter semi-transparent areas in the distal region exchange into increasing semi-transparent yellowish and blueish areas in the mesial region.



THE AESTHETIC DIMENSION



MATRIX – LAYER BY LAYER





Dental surgeon and photo by Ulf Krueger-Janson, Germany
Restoration by MDT Paul A. Fiechter, Germany

TOP OF ITS CLASS

UNSURPASSED. Engineered for technicians and valued by patients. Proven over time and trusted as a material like no other. Formulated with science for optical and technical perfection. Exacting, strong, dynamic, inspiring. That is HeraCeram ceramic.

Nature is waiting to be remodelled by your expert hands so for all that you can do choose HeraCeram.

CLINICALLY PROVEN —

natural results in every situation



Photos and restoration by
Kazumasa Yamashita, Japan



Photos and restoration by
Vincent Stecher and Jonathan Koning,
Netherlands





Photos and restoration by
MDT Uwe Hruschka, Germany



Dental surgeon and photo by Ulf Krueger-
Janson, Germany
Restoration by MDT Paul A. Fiechter, Germany



SCIENCE —

proven veneering for zirconium oxide

Scientific investigations show that an optimised veneering ceramic combined with correct protocols at the laboratory significantly reduce the likelihood of chipping for zirconium oxide restorations.

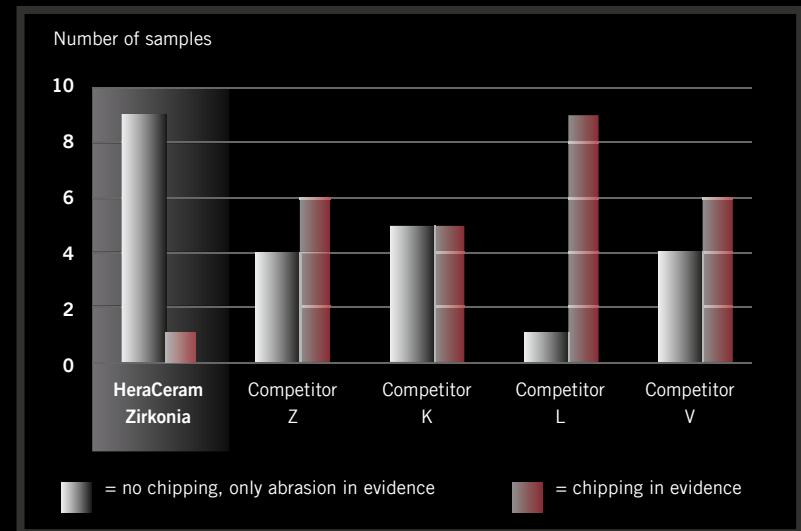
In a recent study on the fracture behaviour of zirconium oxide veneers the Polyclinic for Dental Prosthetics at the Ludwig Maximilians University (LMU) in Munich discovered substantial differences between various veneering

materials. Zirconium oxide crowns were veneered with layering ceramic and examined for chipping after artificial ageing in a mastication simulator. Of the five veneering ceramics examined, HeraCeram Zirkonia turned out to be the best all round. Zirconium oxide crowns that had been veneered with HeraCeram Zirkonia suffered far less chipping than all rival ceramics tested.

Beuer F, Schweiger J. In-vitro-Untersuchung zum Frakturverhalten von Zirkoniumdioxid-Einzelkronen. LMU München, 2012.



STUDY



**CHIPPING PROBLEMS ARE CLEARLY
REDUCED WITH HERACERAM.**

HERACERAM NP-PRIMER —

improves wettability and bonding

Study carried out at the Hannover Medical School on veneering of NPM.

The veneering of non-precious metals (NPM) is often a real challenge due to high oxide formation. A recent study at the Hannover Medical School has shown: the Hera Ceram NP primer increases the wettability of the NPM surface and consequently the bond strength.

Who is veneering NPM, knows the Problem: The oxides on the framework surface influence the bonding. They reduce the wettability of the alloy surface and avoid the full utilization of the bonding parameters. Which can cause to flaws, bubbles or chipping.

The NP-Primer allow an optimal coverage of the alloy surface with ceramics. It is reliable in flaking the emerging oxides and prevent a high oxidation of the alloy surface. This ensure for a certain bonding between alloy and ceramic.

Good wettability creates a secure bond.

The Hannover Medical School has confirmed the primer's positive effect on the bond in a recent in-vitro study. The effects of the primer application were tested quantitatively in a mechanical fracturing test and qualitatively under a scanning electron microscope.

Conclusion: HeraCeram NP primer increases the wettability of the NPM surfaces. This makes optimal use of all the factors involved in the bond and effectively prevents problems such as fracturing, bubbling and flaking.

Source: Kohorst P, Rizeq F, Stiesch M. Verbesserung des Keramik-Legierung-Verbundes durch Applikation eines Primers [Improving the ceramic-alloy bond by applying a primer]. Hannover Medical School, Hanover 2011.

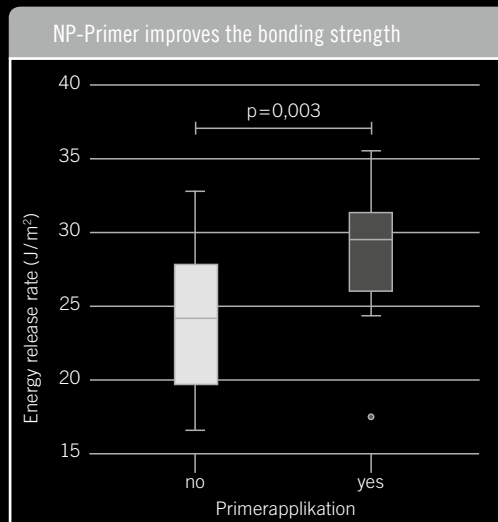
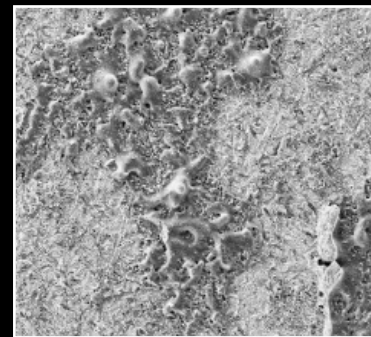


Image: Dr. Philipp Kohorst



HeraCeram NP primer improves the wettability of the NPM surface and thus improves the bond (pictures of fracture surface left without and right with primer).

HERACERAM —

We're glad to be of service!

Do you have any questions about how to handle our veneering ceramics or would you like to attend a training course on aesthetic veneering with HeraCeram ceramics? We'll be pleased to assist you at any time. Looking forward to hearing from you.

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63450 Hanau
Germany

info.lab@kulzer-dental.com
www.heraeus-kulzer.com
www.heraeus-heraceram.com

For further information please contact your local Heraeus Kulzer representative.

CERAMIC FOR ALL THAT YOU DO —

Perfect frameworks for all requirements

EVERY DAY

A—D SHADES

Reliable reproduction
of classic A—D shades

Opaquer set

Dentine
incisal set

Optional:
Stain set

With HeraCeram ceramics, you can achieve aesthetic restorations that suit every need in any situation – from authentic reproduction of everyday A—D shades to skilful customisation, through to high end complex restorations with vibrant light dynamics. All ceramic materials are processed in exactly the same simple way for every framework material. **A great help if you are running a busy dental laboratory.**

PERSONALISED

Patient specific
shade adjustment

Opaquer set

Dentine
incisal set

Optional:
Stain set

Increaser set

Enhancer set



Our starter sets: First-Touch set (A2; A3; A3.5);
Professional set (BL3; A2; A3; A3.5; B2; B3; C2; C3; D3)

MATRIX

Truly natural for highly
individualised restorations

Opaquer set

Dentine
incisal set

Optional:
Stain set

Matrix set



SPECIAL

Special applications

Margin
set

Mono
set

Bleach
shades

Pressable
ceramics

Veneering
ceramic for
lithium disilicate

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