

Heraeus Kulzer

Mitsui Chemicals Group

heraCeram®

HeraCeram Ceramics
Perfect for you.



Giving a hand to oral health.

HeraCeram – Simply perfect.

Ceramics that are perfectly adapted both in terms of their appearance and their technical properties: that means simple, reliable and fast processing with unbeatable aesthetic results. Each HeraCeram ceramic product is specifically tailored to suit your framework material. At the same time, every ceramic also offers consistent processing and high aesthetics for perfect results that you can rely on.

Optically perfect – with high-purity quartz glass

Synthetic quartz glass is your guarantee of superior quality for all HeraCeram ceramics. Thanks to its extreme purity, it offers unique aesthetic properties, e.g. opalescence and fluorescence from within.

Technically perfect – with a stabilised leucite structure (SLS)

The stabilised leucite structure (SLS) ensures that HeraCeram ceramics are particularly resistant to stress. And the consistent level of microfine leucite crystals makes chipping a thing of the past.



Simply perfect – with a consistent processing philosophy

All HeraCeram ceramics are processed in exactly the same simplified way – allowing you to maximise your efficiency. There is also an added bonus: expensive firing time can be saved thanks to shorter firing and cooling times depending upon your preferred technique.

Reap the benefits – with HeraCeram.

Optimise your success with HeraCeram. Surpass your expectation and give your clients the smile that they have only dreamed about on any alloy or zirconia frame work. Inspired by science, HeraCeram creates optimised aesthetics with extreme physical and mechanical strength. Its robustness has been verified by independent university studies. Make life easier and reap the benefits of fast efficient processing that saves time and costs. HeraCeram – made with you in mind.

Optically perfect, technically perfect – for results that you and your patients can see. Everything is geared to your success.

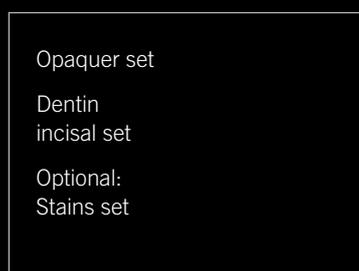


Ceramic[®] for all that you do – Perfect frameworks for all requirements.

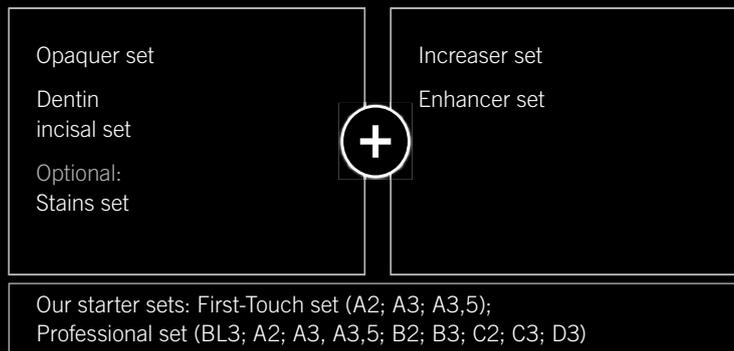
With HeraCeram ceramics, you can achieve aesthetic restorations that suit every need in any situation – from authentic reproduction of everyday A – D shades to skilful customisation, through to high end complex restorations with vibrant light dynamics.

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.

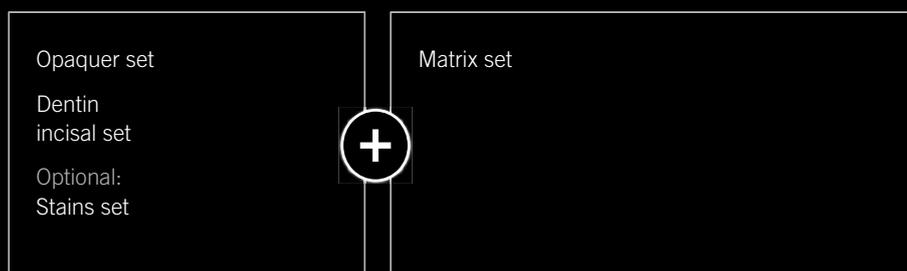
Every day
A – D Shades
Reliable reproduction
of classic A – D shades



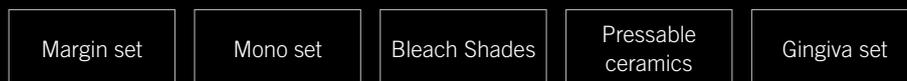
Personalised
Patient specific
shade adjustment



Matrix
Truly natural for highly
individualised restorations.



Special
Special applications



Perfectly tailored to your framework.



For conventional bonding alloys

HeraCeram is a high fusing ceramic line for conventional bonding alloys with a CTE ranging from 13.5 – 14.9 $\mu\text{m}/\text{mK}$.



For zirconium dioxide frameworks

HeraCeram Zirkonia is ideally suited to zirconium dioxide frameworks with its CTE of 10.5 $\mu\text{m}/\text{mK}$. The stabilised leucite structure (SLS) prevents cracking and chipping.



For lithium disilicate and zirconium dioxide frameworks

HeraCeram Zirkonia 750 is developed for two frameworks, lithium disilicate and zirconium dioxide. Its lower firing temperature guarantees a safe treatment of both frameworks.

Available
in 2015



Optically perfect – with 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 can achieve 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 is the base for enamel-like opalescence.

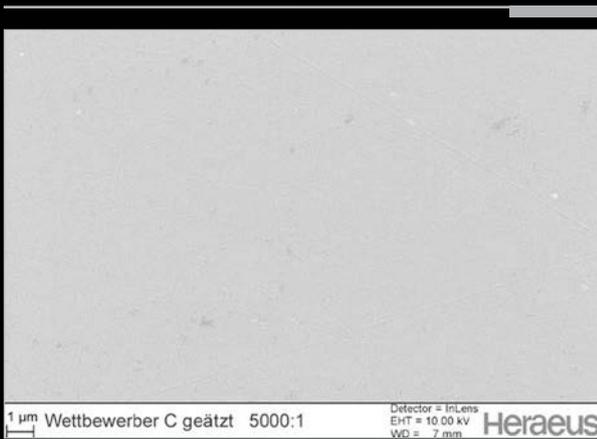
Technically perfect – with a stabilised leucite structure (SLS).



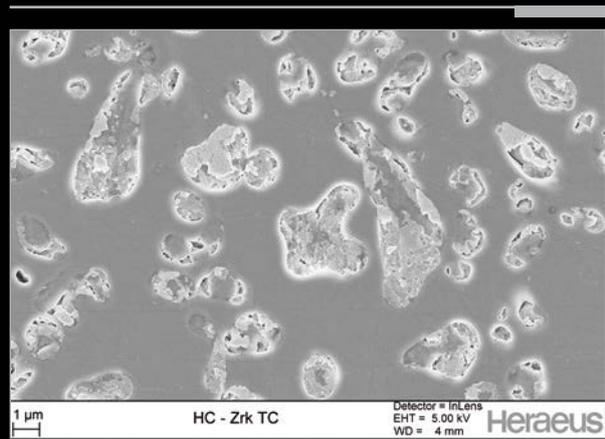
All HeraCeram ceramics are able to combine time saving processes with the highest levels of stress resistance. This is due to what we term as Stabilised Leucite Structure or SLS. All ranges of HeraCeram including Zirkonia contain micro-fine Leucite particles which substantially reduce the susceptibility 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 zirkonia 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

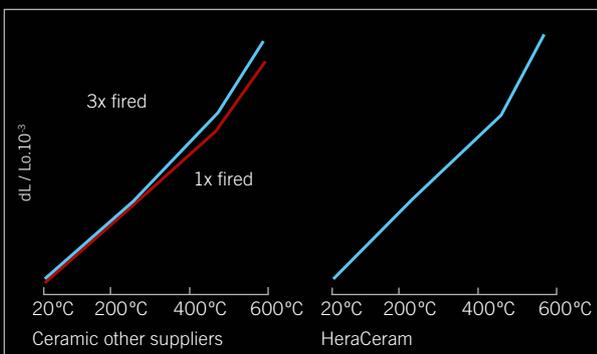


This shows a typical Zirconia Oxide veneering ceramic without the inclusion of Leucite.



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

WAK-Verhalten im Vergleich



Comparison of CTE. Unstable CTE of other dental ceramic after multiple firing. (left) Stabilised CTE of HeraCeram after multiple firing. (right)

The perfect bond – secure bonding for your framework.

NP-Primer



The perfect foundation for safe veneering of non-precious metals. 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 an oxide layer on the nonprecious metal alloy surface. It specifically loosens the oxide layer on the non-precious metal surface and thus enables optimal wetting of the framework surface with ceramic. Even with critical oxide behaviour, the NP-Primer ensures secure bonding between the alloy and bonding ceramic. An optimal foundation for long lasting aesthetic restorations.

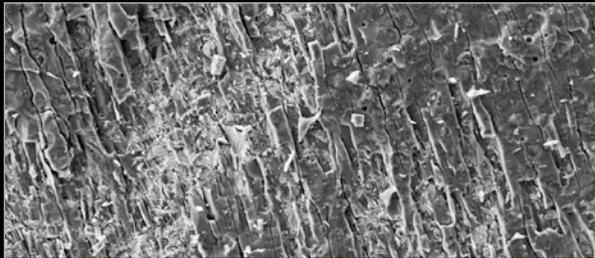
Zr-Adhesive



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



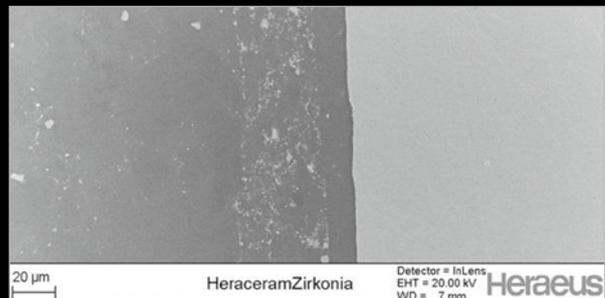
In a high resolution SEM, it is clear that the ceramic has fractured, but fully adheres to the non-precious alloy surface pre-treated with NP-Primer.



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



In close up the varying and inferior degree of wetting of the untreated non-precious surface can clearly be seen, which explains a poor bond strength.



Micrograph of Adhesive on ZrO₂.

Always perfect – top class results
with any processing technique.

heraCeram®



Classic layering technique

From the simple reproduction of everyday shades to portraying intricate life like details of natural teeth, you are able to master every layering concept. Our comprehensive range of ceramics always offers the best solution even if you prefer to use bonding alloy or zirkonia as your preferred framework.

Pressable ceramics

HeraCeram Pressable ceramic. The integration of bonding and press ceramic within a single system. Ideal for inlays, onlays, veneers and single crowns. Harmonise every restoration as nature intended time after time.

Mono – single layer technique

Form and colour simplified. Create the anatomical shape with just one material. Apply a specialised stain between the dentine and incisal areas and that's it. Easy!

Processing of **Universal Stains.**

A range of stains for universal applications.

HeraCeram Stains universal are stains for all ceramic lines from Heraeus Kulzer. The range of indications covers all applications from standard individualisation up to the comprehensive shade design of monochromatic systems (e.g. monolithic zirconium dioxide restorations). Stains and glaze are available in powder and paste form.



Individualisation of molar occlusal surfaces by means of optical deepening of fissures with stains, e.g. Maroon.



In addition to Body Stains (BS) and Enamels (EN), the Stain Set universal includes 17 individual stains and a glaze.



Stains for characterisation have a thicker consistency for effects with precise colour separation. In contrast, the stains for applications over larger surfaces are somewhat softer. As such, they spread out automatically and cover the surface evenly.

HeraCeram Zirkonia 750 – one for two: zirconia and lithium disilicate.



Lower temperature for higher flexibility.

Combining the robustness and reliability of proven SLS technology, HeraCeram Zirkonia 750 is, due to its low firing temperature of 750°C, also perfectly adapted to the specific physical properties of Lithium Silicate making it your ideal material of choice.

With its new highly specialized adhesive, providing world beating bond strength, physical bonding is maximized 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. From everyday restorations up to personalized by our unique Matrix aesthetic concept.

One ceramic designed for two different framework materials.



Gingival restorations – 'Red aesthetics' required.

The increasing use of implants now also makes it possible to indicate fixed dental restorations where the necessary tooth abutments were previously lacking. In these cases, the jaw and gums have already frequently undergone substantial deterioration. However, a restoration can only succeed if the surrounding conditions are right, in other words: if both the 'red' and the 'white' aesthetics can be reproduced. After all, unsatisfactory gums spoil the overall impression and missing gingival substance results in unnatural tooth proportions and 'holes' in the interdental gaps.

The be all and end all: healthy gums

Severely atrophied jaw ridges pose a huge challenge in restorations with crowns and bridges. In these cases, not only the teeth but also the missing gingiva must be replaced. And intact gums not only support a harmonious appearance, they also prevent hygiene and phonetic deficits at the same time. A restoration only becomes a rehabilitation when the gums look healthy.

Demanding restorations

Reconstruction of the gingiva is just as challenging as veneering. It is also necessary here to pay attention to anatomy, surface texture, colour and individual characteristics. These factors play a crucial part in how the restoration is perceived – both visually by the general public and haptically by the patient's tongue.

New gingival colour concept

The demand for gingival restorations is increasing. Heraeus Kulzer has therefore revamped the gingival colour concept: three additional gingival colours and special gingival stains offer the dental technician a whole range of possibilities for perfectly reproducing the 'red aesthetics' so that the patient can smile happily again.



Laughter and happiness show more than only teeth.



Fragmentary: the provisionals give an idea about the challenge for aesthetic and phonetic on these atrophied jaws.



Natural impression: restoration of the anteriors with restoration of the gums. (Source: Zsolt Kovacs, Labor Dentalmaia, Pedro Couto Viana, Dentist; Portugal)

Science – proven veneering for zirconium oxide.

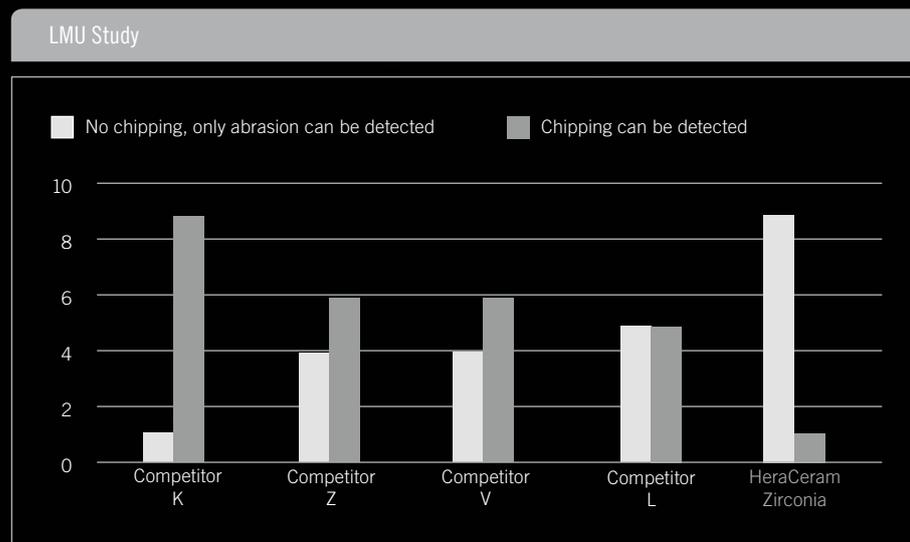


Scientific investigations show that an optimised veneering ceramic combined with correct protocols at the laboratory significantly reduce the likelihood of chipping for zirconium oxide restorations.

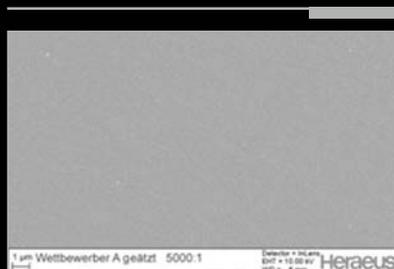
In a recent study on the fracture behaviour of zirconium oxide veneers the Policlinic for Dental Prosthetics at the Ludwig Maximilians University (LMU) in Munich discovered substantial differences between various veneering materials. Zirconium oxide crowns were veneered with layering ceramic and examined for chipping after artificial ageing in a mastication simulator.

Of the five veneering ceramics examined, HeraCeram Zirkonie turned out to be the best all round. Zirconium oxide crowns that had been veneered with HeraCeram Zirkonie suffered far less chipping than all rival ceramics tested.

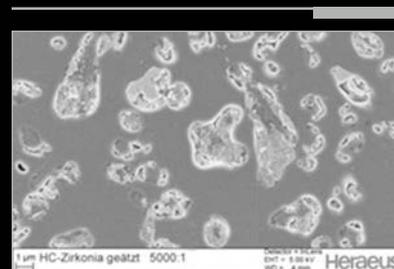
Beuer F, Schweiger J. In-vitro-Untersuchung zum Frakturverhalten von Zirkonoxid-Einzelkronen. LMU München, 2011, published at the magazine "das dental labor", March 2012.



► Chipping problems are clearly reduced with HeraCeram.



Zirconium oxide bonding ceramic without anti-crack structure



HeraCeram Zirconia with stabilised leucite structure

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.

The NP primer increased the rate of energy release. This defines the energy required to detach the ceramic from the alloy surface. Consequently, a higher value represents a more secure bond between the alloy and the ceramic. Under the microscope, islets of ceramic adhesions in the test without primer application indicated poor wetting of the framework surface. The tests using the NP primer reported a homogeneous surface lightly coated with ceramic – a clear indication of the uniform bond between the ceramic and framework.

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.

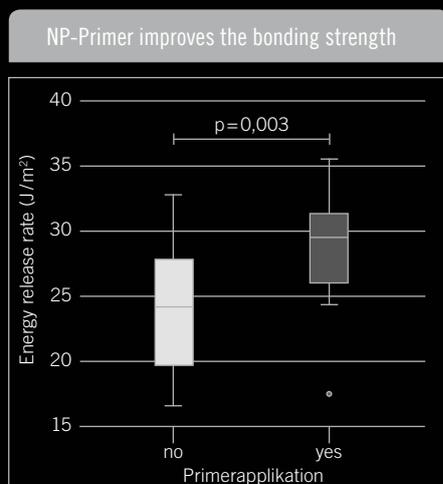
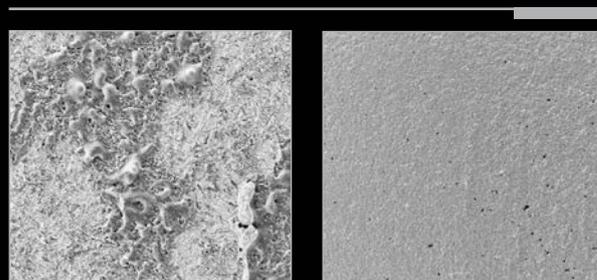


Image: Dr. Philipp Kohorst



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).

Heraeus Kulzer Academies – training courses for your success.



We offer a full range of exciting training courses designed to surpass your expectations. Expand your knowledge and increase your skill levels by attending a tailored training programme presented by our technical training team.

We are here to help you for all things ceramic and we look forward to seeing you.



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