



Application Guide HeraCeram[®] Saphir

Veneering Ceramic with enhanced aesthetical properties
for Traditional Metal Bonding Alloys

Giving a hand to oral health.



KULZER
MITSUI CHEMICALS GROUP

HeraCeram® Saphir

For traditional metal bonding alloys.

HeraCeram Saphir is the optimal choice for veneering traditional metal bonding alloys in a CTE range of 13.5–14.9 $\mu\text{m}/\text{mK}$. Thanks to the low maximum firing temperatures of 880°C, all alloys in this CTE range can benefit from the unrivalled aesthetics of HeraCeram Saphir.

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Paul Fiechter, Master Dental Technician, Switzerland

"The Light Booster interacts with changing lighting conditions and produces a natural and lively interplay of colours. The joy comes when you see the finished restoration. The light boosting effect of the new HeraCeram Saphir has to be seen to be believed. If you want to create a masterpiece, I would fully recommend this material."

HeraCeram® Saphir

Let your talent shine on metal frames

Your advantages at a glance:

- **New “Light Booster” technology:** Authentic look and true opalescence on metal frames
- **Incredible Paste Opaque:** Impressive masking power in extremely thin layers of 60–100 µm
- **Stabilised Leucite Structure (SLS):** Prevents uncontrolled CTE growth; no chipping
- **Simply Perfect:** Easy handling & next level aesthetics – from everyday restorations to masterpieces

*Let
your
talent
shine.*

HeraCeram® Saphir

Natural aesthetics and vibrant light dynamics every time.

The main secret to the ceramic's next-level aesthetics lies in the Light Booster technology – a new glass-ceramic system that releases lifelike opalescence throughout the ceramic. This new feature, which never fades after firing, helps restorations come closer than ever to the opalescence of real teeth. The ceramic also includes an all-new opaque that ensures enhanced bonding and masking, yet requires less time for application. With HeraCeram Saphir, ceramic veneering has never been easier – and it's never looked so good. Let your talent shine.

Markus Stang, Master Dental Technician, Germany
"The crowns and bridges shine like stars thanks to the Light Booster effect. It is amazing how fast and easy it is to create a restoration of such a high standard."



Optically Perfect – with Light Booster technology.

- Authentic look and true opalescence on metal frames.
- Light enhancing Light Booster-crystals affect an opalescent effect corresponding to the natural enamel.
- Dynamic effect remains unaltered by multiple firings.

Technically Perfect – with Stabilised Leucite Structure (SLS).

- Stabilised Leucite Structure (SLS) prevents an uncontrollable CTE rise and ensures highest level of stress resistance (no chipping).
- All-new Paste Opaque offers impressive masking power in extremely thin layers (60–100 µm).
- New milling method delivers improved handling characteristics and less shrinkage.

Simply Perfect – with an consistent processing philosophy.

- Maximise your efficiency: all HeraCeram ceramics are processed in exactly the same simplified and reliable way.
- Easy handling & next level aesthetics – from everyday restorations to unique masterpieces.
- Identical aesthetics irrespective of the framework due to ideally matched components within the HeraCeram range.



HeraCeram[®] Saphir

SLS – The recipe for success.

The Stabilised Leucite Structure (SLS) of HeraCeram Saphir ensures stable CTE values and thus completely avoids the problem of uncontrollable leucite crystal growth over multiple firings. This ensures greater resistance to stress and no chipping or quality issues in the final restoration. Thanks to shorter firing times, it also saves technicians time.

The typical disadvantage of leucite with many metal ceramics is the uncontrollable and continual growth of leucite crystals over multiple firings. Kulzer, however, has developed completely different manufacturing methods for dental ceramics with an intense focus on leucite management. The resulting “Stabilised Leucite Structure” delivers all the benefits of leucite along with stable CTE values and better durability.

Thanks to the processing method, all Kulzer dental ceramics allow you to enjoy the benefits of leucite without any worry about the adverse effects, such as an uncontrollable increase in CTE values. For the user, this means maximum reliability and less stress, with a perfectly aesthetic outcome.

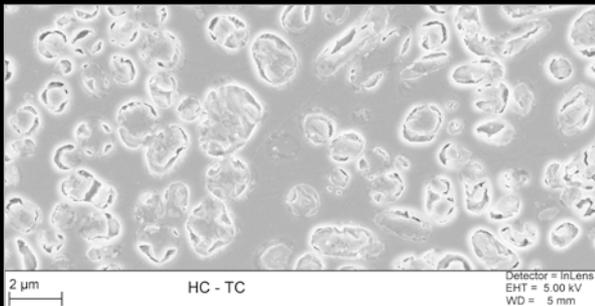


Fig. 1 HeraCeram etching micrograph with leucite structure.

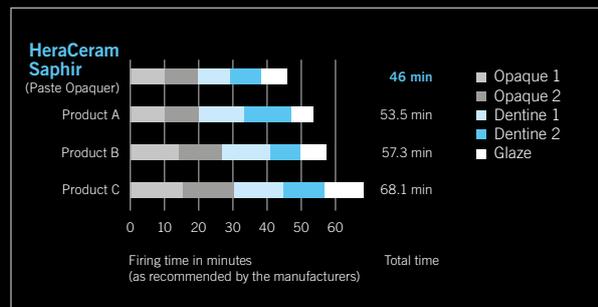


Fig. 2 Extremely short firing times.

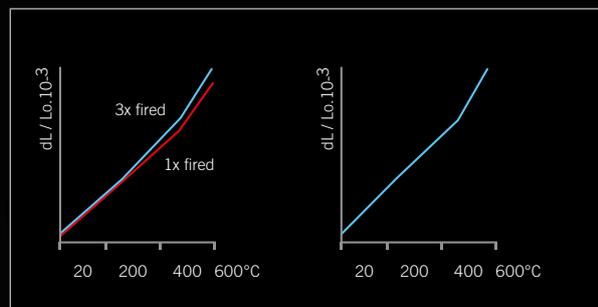


Fig. 3 Comparison of CTE increase:

Unstable CTE of other dental ceramic after multiple firing.

Stabilised CTE of HeraCeram Saphir after multiple firing.

HeraCeram® Saphir

Perfect Frameworks for all requirements.

From everyday restorations to highly aesthetic works of art.

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

Aesthetic veneering is quite simple with our regular materials, and you can also deliver patient-specific restorations with a wide range of custom materials. And when you need a very natural, highly aesthetic look, nothing beats our Matrix materials. HeraCeram offers the flexibility you need for your design.

Everyday A–D Shades

Reliable reproduction
of classic A–D shades

- Opaquer set
- Dentine incisal set and/or ■ Chroma dentine set
- Optional:
 - Stains set universal

Personalised

Patient specific
shade adjustment

- Opaquer set
- Dentine incisal set and/or ■ Chroma dentine set
- Optional:
 - Stains set universal



- Enhancer set

Our starter set: First-Touch set (A2; A3; A3,5)

Matrix

Truly natural for highly
individualised restorations.

- Opaquer set
- Dentine incisal set and/or ■ Chroma dentine set
- Optional:
 - Stains set universal



- Matrix set

Special

Special applications

- HeraCeram Margin set

- Bleach Shades*

- HeraCeram Press*

- Gingiva set

* compatible with HeraCeram Saphir

The gem of dental ceramics

The sapphire, or Saphir in German (pronounced SAH-fir), is a precious gemstone that stands for timeless beauty and its breath-taking interaction with light. Embodying these properties, HeraCeram Saphir is the next step forward in the evolution of the market-leading HeraCeram brand, which shall forever remain: **Optically perfect. Technically perfect. Simply perfect.**

Kulzer's promise: By dental technicians, for dental technicians

We aim to meet and exceed our customers' needs. That is why we develop our products in close collaboration with international experts. We established this process to help ensure that our products perform exactly as you expect them to perform.



Thomas Backscheider, Germany

"This new powder Saphir is the next step for us technicians, the step into the "Light Booster" world. I've never seen a ceramic with this opalescence before. And the Opaque is a game changer. Very fast to apply and a perfect covering of the metal framework."



Rüdiger Neugebauer, Portugal

"It's incredible that we can achieve such light dynamic effects on metal frames. If you want something different that sets you apart from all of the other ceramists out there, do yourself a favour. Start using HeraCeram Saphir. I did not know that a metal ceramic could look this good."



Björn Maier, MDT, Germany

"As soon as you use the Paste Opaque, it becomes immediately apparent that Saphir is an outstanding product. One application is enough to cover the whole framework. From my point of view, it's the best on the market – a true USP."

HeraCeram® Saphir

Everyday layering.

Framework preparation

To ensure high bond strength, the framework must be sandblasted with 125 µm alumina oxide prior to veneering. High gold content, palladium free alloys must only be sandblasted at a pressure of 2–3 bar and at an obtuse angle. This prevents alumina oxide particles penetrating the surface of the framework. All other alloys can be sandblasted at a pressure of 3–4 bar.

The micro retention created by sandblasting enhances the metal ceramic bond and consequently the quality of the prosthetic restoration. Conditioning the surface is the first step toward veneering with ceramics.



Fig. 4 Trimmed framework.

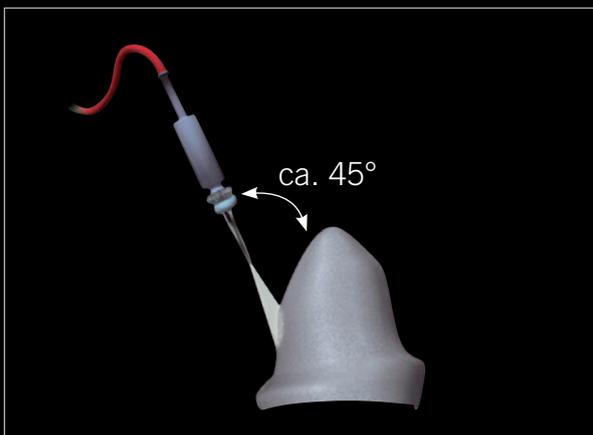


Fig. 5 Sandblasting at the correct angle.

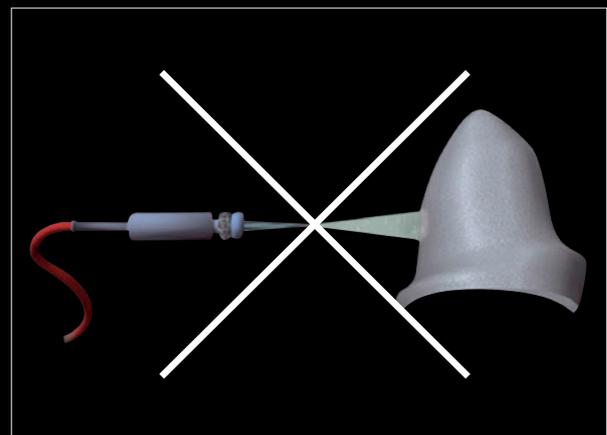


Fig. 6 Sandblasting at the incorrect angle.

Cleaning the surface of the framework prior to oxidation

The framework surface is best cleaned with a steam cleaner. After cleaning, the frameworks must no longer be touched with fingers but only with clean tweezers or haemostats.

The oxide firing settings (temperature, times, vacuum or atmosphere) are shown on the alloy packaging. Oxidation firing is a good indicator for assessing the cleanliness of the alloy. The oxide layer must be uniform and free of mottling. If the surface is mottled, the framework must be sandblasted again with alumina oxide, cleaned and the oxidation firing repeated.

When firing high gold content palladium free alloys it is highly advisable to provide the framework with firm, adequate support on the firing tray.

With Pt and Pd based alloys, the oxide layer extends deeper into the alloy than with high gold content alloys and the oxide is relatively dark. In cases where inadequate space is available and only a thin layer of ceramic can be applied thus causing difficulties with the shade, the oxide layer can be sandblasted off again with alumina oxide. The opaque is then applied directly onto the cleaned framework.

High gold content metal ceramic alloys containing zinc must be pickled after the oxide firing to remove the oxide (e.g. with Hera AM 99, 10 min).

Once they have been steam cleaned and dried, the frameworks are ready for veneering with ceramics.

HeraCeram® Saphir video playlist



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VIDEOS: Watch videos on the various stages of layering by entering the url or visit our YouTube Channel.

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Everyday layering.

Firing the ceramic

The temperatures and settings for firing HeraCeram Saphir are shown in the firing charts in the firing programmes section.

Firing cycles for high gold content, palladium free alloys: It is essential to provide the framework with firm, adequate support on the firing tray.

Firing ceramic onto soldered frameworks: The ceramic bearing surfaces should not be coated with large areas of solder.

Cooling after ceramic firing

When veneering with HeraCeram Saphir, it is no longer essential to cool the restoration slowly to allow the CTE of the ceramic to adapt to that of the alloy.



Fig. 7 Sandblasted framework.



Fig. 8 Oxide fired framework.

NP-Primer

Only required when veneering non-precious alloys.

The NP-Primer conditions non-precious metal alloy surfaces by preventing uncontrolled excessive oxidation and thus ensures that the framework surface is wetted perfectly with the opaquer.

The NP-Primer is applied very thinly (high brush pressure!) to the veneer surface with the paste opaquer brush and fired under vacuum for 1 minute at 950°C.



Fig. 9 NP-Primer applied very thinly (high brush pressure!) with paste opaquer brush.



Fig. 10 Fire at 950°C under vacuum for 1 minute.

When using the NP-Primer, non-precious metal specific expansion cooling may no longer be required.

PLEASE NOTE: With some non-precious alloys water soluble oxides may form during firing and cause yellowish discoloration in the ceramics. To prevent this discoloration, non-precious frameworks should be rinsed with water after every firing.

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Everyday layering.

Paste Opaque

The HeraCeram Saphir Paste Opaque is applied in thin coats. Paste Opaque is also fired at 880°C, whereby the pre drying phase must be adapted to the drying behaviour of the paste liquid (see the firing charts in section firing programmes).

If the Paste Opaque has become dry and stiff due to excessive storage, HeraCeram Saphir PO liquid can be added carefully to restore the ideal consistency.

After firing, the opaque should have a glossy surface.



Fig. 11 A uniform coat of Paste Opaque.



Start Video
kulzer.com/video-hcsaphir-opaque



For custom designs of the opaque layer, 3 intensive opaques are available in paste form:

- **Bleach**, a whitish opaque for reproducing extremely light shades or lightening the opaque shades.
- **Gold**, for creating a “warmer” basic tone by increasing the chroma from within the veneer.
- **Gingiva**, pink opaque for use in those regions where gingival ceramics is applied.

The full shade combination chart for HeraCeram Saphir ceramics is shown on page 43.

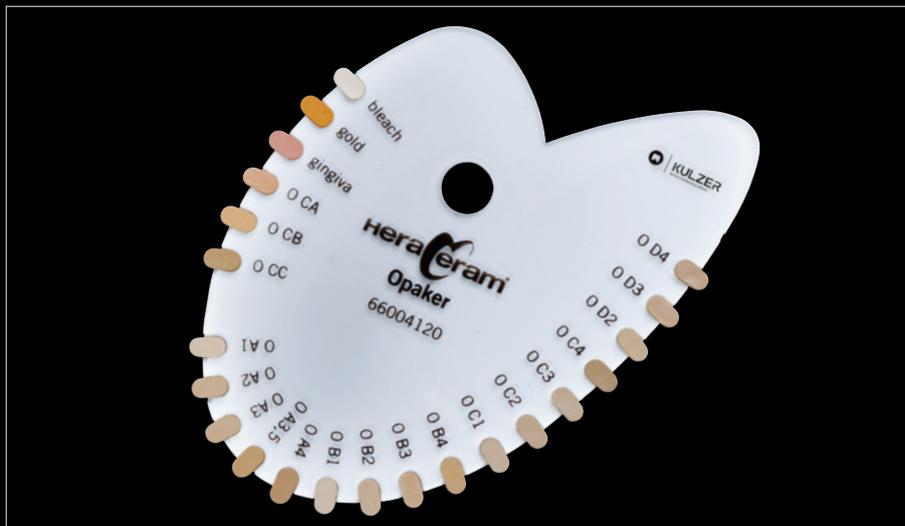


Fig. 12 The opaque shade guide.



Fig. 13 The masking power of the opaque can be seen after applying and firing the coat.

PLEASE NOTE: Cooling after firing the ceramic
The firing platform is lowered immediately after the cycle is finished. The firing tray with the restorations can be removed immediately and cooled in air.

PLEASE NOTE: If no NP-Primer is used on non-precious alloy, we recommend firing the first layer of opaque at 950°C. The ceramic firing charts are in the firing programmes section of these application guide or under kulzer.com/heraceram.

HeraCeram® Saphir

Everyday layering.

Dentine/Incisal build up

Firing temperature: 860°C (see the firing charts in the firing programmes at the end of the brochure).
In order to achieve classic shades, HeraCeram Saphir can

be built up in two simple layers using dentine and and/or chroma dentine and enamel depending on the framework structure and the available space.



Fig. 14 For better control over dimensions and positioning the dentine body can be built up full size with **dentine** and/or **chroma dentine** before cutback.



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Fig. 15 After built up of full dentine body the cutback follows in controlled manner – or the dentine body can be built up directly. How to use HeraCeram Saphir Chroma dentine see page 21.



Fig. 16 Optional: Once the dentine has been cut back, the mamelons can be formed smoothly with a brush.



Fig. 17 The cut back comprises the incisal edge of dentine and tapers off towards the lower third of the tooth.



Fig. 18 The facing is then built up fully with the appropriate incisal ceramics (refer to shade chart) page 43.



Fig. 19 The vitality of the incisal region can be further enhanced by inlaying transparent wedges with HeraCeram Saphir Transpa.

PLEASE NOTE: If no NP-Primer is used on non precious alloys, it is advisable to relieve stresses by cooling these alloys as they are very hard. This is achieved by leaving the firing tray with the restorations on the firing platform of the furnace for 1–2 minutes after firing. Or programme a cooling phase of 1–2 minutes.

HeraCeram® Saphir

Everyday layering.



Fig. 20 After firing, the ceramic has a glossy, structured finish. The proximal and occlusal contact areas are ground in with diamond stones.



Fig. 21 The appropriate ceramics (e.g. dentine, incisal or transparent) are then built up to compensate for firing shrinkage and finalise the shape before being fired with the “Dentine 2” cycle.

PLEASE NOTE: When grinding ceramic it is essential to wear a mask and safety glasses and use a dust extractor. Avoid inhaling dust.

Glaze firing



Fig. 22 If no further ceramic needs to be added, the ceramic should be ground with diamond burs to finalise the shape and surface morphology. Ceramic dust and contamination are then removed from the surface using, for example, a steam cleaner.



Fig. 23 Final individualisation with [HeraCeram stains universal](#). For glaze firing, the ceramic can still be given final individual characterisation. Wetting the porcelain surface with [staining liquid](#) makes the layering and colour impression more visible. This gives good control for custom characterisation with glazing material and stains.

The level of glaze and texture of the ceramic surface can be influenced while firing the glaze by adjusting the temperature, hold time and final temperature. Further influencing factors are the type of surface finishing and preparation for glaze firing. Therefore, the settings quoted for glaze firing may only be considered as guidelines which have to be adjusted to the desired outcome.

The firing cycle is shown under Glaze Firing in the firing programmes section (firing temperature 850°C). HeraCeram Saphir can also be polished by hand. Our Signum HP Pastes has proven really effective for creating a high lustre.

HeraCeram® Saphir

Everyday layering.

Control



Fig. 24 In reflected light after glaze firing.



Fig. 25 In transmitted light after glaze firing.

Correction ceramic is for adjustment after the glaze firing, e.g. building up contact areas – its firing temperature of 810°C is at a safe distance from the dentine firing temperature. Correction material is unshaded and transparent. If the corrections need shading, it can be mixed with any of the HeraCeram Saphir ceramics. Depending on the mixing ratio, the firing or processing temperature of the correction material must be increased (e.g. 1:1 mixture – Firing temperature approx. 835°C).



HeraCeram® Saphir

Personalised layering.

Personalised layering

The additional compounds Chroma dentine, Increaser, Enhancer and Mask expand the design possibilities of a standard layering for custom characterisations oriented

to the shade guide tooth and also ensures natural and colourful aesthetics when there is very little space available.



Fig. 26 Amazing “custom” results can be achieved in just a few easy steps.



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video-hcsaphir-personalised](https://kulzer.com/video-hcsaphir-personalised)



Increaser

The use of increasers improves control of the effect of the shade in all constrained spaces, such as for example, in the cervical region. Likewise, excellent harmonisation of optical differences resulting from very wide variations in layer thickness, for example, in bridge sections, is possible. For distinctive (patient-oriented) characterisations and

individual modifications, 6 highly chromatised increasers are available in Peach (INP), Solaris (INS), Mango (INM), Orange (INO), Caramel (INC) and Taiga (INT). A full shade configuration chart for HeraCeram Saphir ceramics is shown in the shade combination section on page 43.

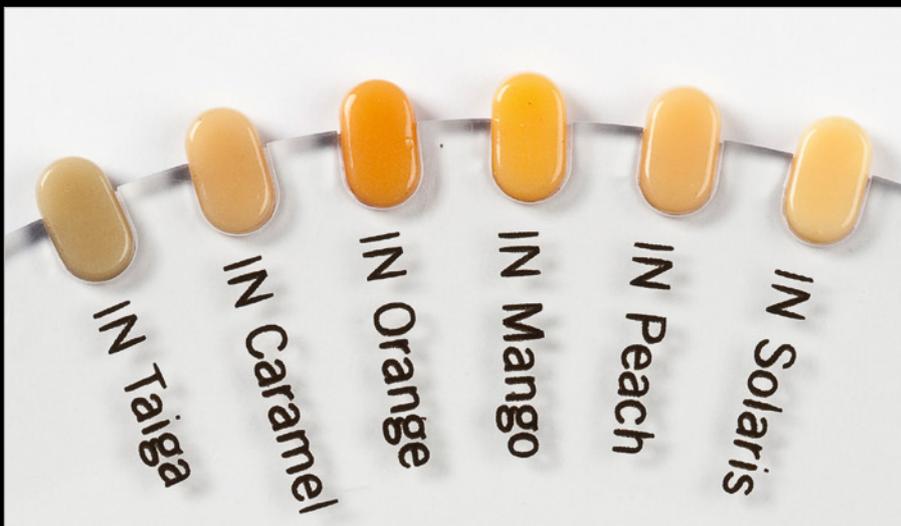


Fig. 27 Increaser shade guide.

Chroma dentine

HeraCeram Saphir dentine and/or chroma dentine can be used for layering of the dentine core. The dentine of HeraCeram Saphir is highly transparent. This promotes higher brilliance and improved aesthetic properties.

Chroma dentine (e. g. CD A3) is the same colour as the corresponding dentine (e. g. D A3). Its high colour density conceals the framework structures better and thus it is easy to control shade accuracy even at minimum layering

thickness (in case of limited space). This allows the technician to adapt a preferred layering scheme to suit all indications.

The dentine core can be completely or partially built up with chroma dentine.

HeraCeram Saphir chroma dentine is orientated on the 16 dentine shades A1–D4 and exhibit increased chroma and lower transparency in comparison to dentine ceramics.

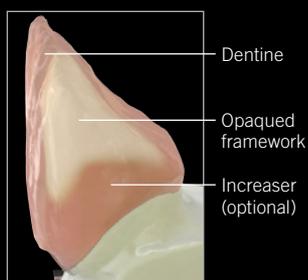


Fig. 28 In this case, the dentine core can be built up using dentine material.

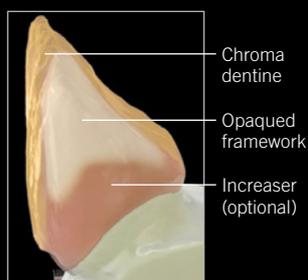


Fig. 29 The use of chroma dentine is recommended for build up of the dentine core.

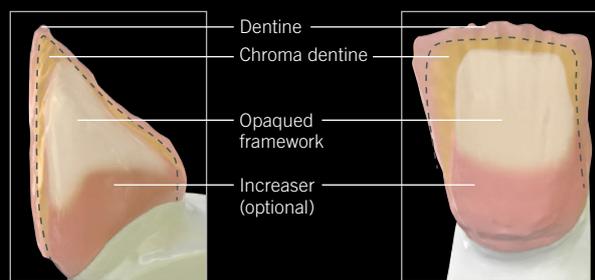


Fig. 30 Depending on the available space, the dentine core can be shaped using a combined layering of dentine and chroma dentine.



Fig. 31 (Teeth: 11–21): Chroma dentines are placed in critical areas such as the cervical area or other regions, if necessary without further layering, or wherever a base has to be masked properly even where only limited space is available. Light optical distinct borders at the incisal ends of frameworks can be avoided by slightly overcontouring with chroma dentine.



Fig. 32 Crown contours built up fully with dentine or chroma dentine.

HeraCeram® Saphir

Personalised layering.

Mask

Incisal like ceramic with increased opacity, balances the transparency so that on the one hand, the in depth effect is retained yet on the other hand the structure of the frameworks can no longer be perceived.

MA bright and MA shadow can also be used to modify the brightness of the facing.

The Mask components and a typical example of how they are applied:



Fig. 33 After the body has been built up and cut back ...



Fig. 34 ... a thin layer of Mask material is applied to the incisal area of the dentine to mask the undersized framework.





Fig. 35 The correct incisal ceramic for the shade is applied and feathered toward the body.



Fig. 36 Then as usual built up again using incisal and transparent materials.

HeraCeram® Saphir

Personalised layering.

Enhancer

Enhancers are customised transparent ceramics with which the hue or brightness of the layering can be influenced slightly but without affecting the character of the shade.

This enables the typical shade tones of central and lateral incisors as well as canines to be reproduced easily. Even those deviations in shade which cannot be shown on a shade guide can be achieved in a controlled manner using the 6 Enhancers.



Fig. 37 After the correct incisal ceramic for the shade is applied, the restoration is then customised by completing the build up with Enhancers.

This may involve for example, lightening the central incisors with a thin layer of EH bright or turning the surfaces reddish (with EHA), yellowish (with EHB) or greyish (with EHC). Using EH neutral a neutral transparency is provided.



Fig. 38 Crowns after the first firing.



Fig. 39 Corrections carried out with transparent materials and **Enhancer EH neutral**. The desired effect can thus be nuanced with correction layering or neutral shape corrections undertaken with enhancers.



Fig. 40 With only minimal yet efficient effort, results can be achieved which, are a pleasure to see.



Fig. 41 In transmitted light.

HeraCeram® Saphir Personalised layering.

The Increaser materials and the Enhancer Set can also be used for building up posterior restorations.



Fig. 42 Opaqued crowns.



Fig. 43 The so called “fish mouth” has been built up with dentine.



Fig. 44 Modifier such as Increaser Orange (IN O) has been inlaid to create an in depth effect in the occlusal depth.



Fig. 45 The dentine is extended over the modifier and the external aspects are cut back.



Fig. 46 Enhancer neutral (EH neutral) is then applied to increase the transparency.



Fig. 47 Fully built up crowns with incisal, Enhancer materials and EH bright on the cusp tips.

HeraCeram® Saphir
Personalised layering.



Fig. 48 Crowns after the first firing.



Fig. 49 Corrections carried out with Enhancer EH neutral.



Fig. 50 Crowns after the second firing.



Fig. 51 Crowns after trimming with diamond burs and silicone polishers.



Fig. 52 Staining with HeraCeram stains universal.



Fig. 53 After the glaze firing.

Individualised layering with the Matrix Set

Custom build up concentrates on reproducing patient specific shades and shade characteristics with their light optical elements such as brightness, transparency, fluorescence and opalescence.

The ceramic compounds of the Matrix set have remarkable aesthetic properties. With their easy layering, they make completely natural results possible. The Matrix aesthetic concept, which is developed in cooperation with MDT Paul A. Fiechter, has a simple layered structure that is easy to implement.

Explanation of the Matrix components

- **MD Mamelon Dentine; SD Secondary Dentine** – Ceramics which balance chroma and fluorescence to illuminate the mamelon structures naturally.
- **VL Value** – Highly fluorescent ceramics for influencing the brightness in the incisal region.
- **OS Opal Incisals** – These incisal ceramics replace the corresponding standard incisal materials. They are arranged and used in the same manner.
- **OT Opal Transpa** – Transparent ceramics for use with custom build up techniques, which reflect the spectrum of natural enamel.
- **OT1 – OT10** – Neutral opalescence, where the concentration increases from OT1 to OT10, whereby the transparency decreases.
 - OT1 is the most transparent Opal ceramic.
 - OT10 is whitish opal.
 - OTY; OTB; OTA; OTG and OT Ice: Opal Transpa ceramics with modified shades
 - OT Yellow
 - OT Blue
 - OT Amber
 - OT Grey
 - OT Ice



Fig. 54 Matrix shade guide.

PLEASE NOTE: An individual layering is based on the patient. Corresponding the following layering is as an example only. The concrete use of the individual Matrix masses must be decided case by case.



Fig. 55 Mixing the appropriate shade of dentine with **Mamelon** or **Secondary dentine** increases its chroma in the cervical region. These compounds intensify the colours' luminosity with their matching of chroma and fluorescence. (Alternatively, the colour-coordinated **chroma dentine** can also be used).



Fig. 56 The crowns are built up fully with **dentine** or **chroma dentine** to allow them to be cut back in a controlled manner.



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HeraCeram® Saphir

Matrix layering.



Fig. 57 The central incisor (11) has been cut back.



Fig. 58 All crowns have been cut back.



Fig. 59 To control the brightness or partial brightening of the dentine, the **Value materials (VL)** in the incisal region are somewhat thicker (about 0.3 mm) and layered to the tooth with thin tapering.



Fig. 60 Smooth transitions are important to avoid distinct borders between the material and base shade.



Fig. 61 Mamelon dentines (MD) are flooded into the Value ceramics ...



Fig. 62 ... and contoured like mamelons with a brush. This creates impressive interaction between the lighter and darker shaded areas. The resulting mamelon structures are further illuminated from within the layers by the highly fluorescent Value materials (VL).

HeraCeram® Saphir

Matrix layering.



Fig. 63 A ridge of e.g. **Opal transpa Ice (OT)** is laid over the mamelons.



Fig. 64 The mamelon structures are then overlaid with **Opal incisal (OS)**.



Fig. 65 The desired anatomical contours are then built up with the correct shade of **Opal incisal (OS)** or various **Opal Transpa** materials (OT).



Fig. 66 Fully built up crowns.



Fig. 67 After the first dentine firing.



Fig. 68 After firing, the sintering shrinkage is compensated for and fine corrections of form and layering are carried out with e.g. [Opal Transpa materials \(OT\)](#). Characterisation can then be done with [HeraCeram stains universal](#) and [glaze](#).

HeraCeram® Saphir
Matrix layering.



Fig. 69 In reflected light.

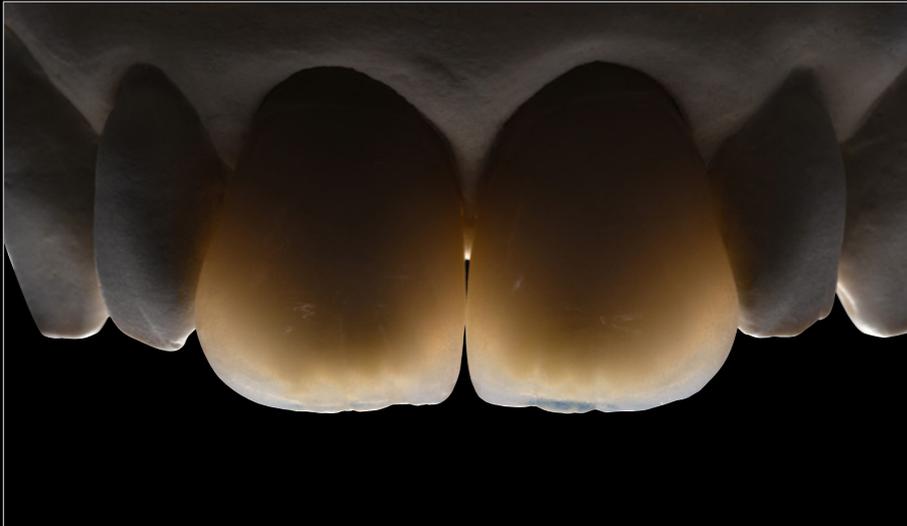


Fig. 70 In transmitted light.

HeraCeram® Saphir Special.

Use of shoulder material (ceramic margin)

The shoulder ceramic range includes 5 HM (high fusing margin) and LM (low fusing margin) shoulder ceramics.

HM/LM 1–6 are coordinated with the respective shades as shown in the shade chart.

HM margin ceramics (high fusing) are used in the classic manner and fired at a temperature of 870°C. LM margin ceramics (low fusing) are not used until the veneering is complete, i.e. after glaze firing. Due to their low firing temperature of only 790°C LM margin materials can also be used for correction e.g. the contours, pontics or contact areas.

HM shoulder material (high fusing)

Framework design

Metal free crown margins require a shoulder or, at least, deep chamfer preparations.



Fig. 71 The crown margin is reduced by approx. 1 mm to create space for the ceramic shoulder. The margin of the metal framework should be reduced by approx. 1–1.5 mm, conditioned as usual and masked with [HeraCeram Saphir Paste Opaque](#). When applying the [opaque](#), ensure that the metal margin is fully masked where the ceramic shoulder is to be built up.



Fig. 72 Applying the separating agent to the margin area. Firstly, [HeraCeram Insulation F separating agent](#) is applied to the die stone surface in the shoulder region. Any sealant applied to the die stone previously will impede the separating properties!

HeraCeram® Saphir Special.

First build up with HM margin ceramic



Fig. 73 The shoulder material is mixed with SM Liquid to produce a kneedable dough before being applied to the cervical region of the crown.



Fig. 74 Any excess liquid is then absorbed to condense the ceramic slightly. Drying the margin ceramic carefully with a hair dryer increases its firmness making it safer to handle.



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Correction build up

The firing cycle is shown in the section for firing programmes.



Fig. 75 After firing, the marginal fit is checked and the changes caused by sintering compensation. The model is coated with [HeraCeram Insulation F separating agent](#) again and the HM margin material is mixed as for the first build up. To ensure that margin material adapts properly to the fired ceramic shoulder, the ceramic shoulder should be trimmed slightly to roughen it.



Fig. 76 Once the HM margin ceramic has been applied, it is replaced on the model by tapping it gently. The excess is removed. Once dried, the restoration is released from the model again and fired.



Fig. 77 The ceramic margin fits perfectly after correction.

HeraCeram® Saphir Special.



Fig. 78 The ceramic is then built up as usual.

LM shoulder material (low fusing)

Framework design

LM margin materials can be used for adding a ceramic margin after building up the restoration, i.e. after the glaze firing. They are processed the same as HM margin materials except that the firing temperature is 790°C.

LM margin ceramics are not only for building up and correcting margins, but can also be used for all other corrections, e.g. contouring or building up contact areas.



Fig. 79 Metal ceramic crown with inadequate marginal fit.



Fig. 80 Correcting the marginal fit with LM margin ceramic ...

Correction build up

The firing cycle is shown in the section for firing programmes.



Fig. 81 ...in the pontic and cervical regions.



Fig. 82 Finished metal ceramic crowns with ceramic margins.

Final Treatment

HeraCeram Saphir is easy to mechanically polish. For final polishing, our Signum HP Paste is recommended.

To achieve a smooth and shiny alloy surface, the polishing process should correspond to the hardness of the alloy in question. The direction of the polishing tool should be constantly changed. For high-lustre polishing with rotating linen, untreated cotton and wool buffs, only a small amount of polish should be used.

Polishing the ceramic

The object should be cleaned before every change of the polish. Cleaning before changing the polishing tool is not required for the same polish. Smooth alloys are pre-polished with a rubber polisher until the polished surface is free of streaks and grooves.

Polishing the metal surface

Polishing is then done with a hard brush in the handpiece at low speed (5000RPM) with a little Hera GPP 99 gold polishing paste and slight contact pressure. High-lustre polishing is carried out with a soft goat's-hair brush in conjunction with the Hera GPP 99 gold polishing paste at low speed (5000RPM) in a handpiece and with low contact pressure. The final residue of the applied paste is then removed with wool buffs.

Pickling the crown margins of finished workpieces

If oxide residue remains on the crown margins of ceramic veneers, this may cause gum irritation. Pickling of finished restorations to completely remove oxide residue is therefore generally recommended to increase safety for patients. For this, pickling is done in Hera AM 99 for about 10 minutes at around 70°C. (The same bath can be used to remove oxides after oxide firing.)

Acid residue must then be removed from the restoration by washing and careful evaporation, and it should also be cleaned.

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Shade Combination.

Shade Combination																
	A1	A2	A3	A3.5	A4	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4
Paste Opaquer	POA1	POA2	POA3	POA3.5	POA4	POB1	POB2	POB3	POB4	POC1	POC2	POC3	POC4	POD2	POD3	POD4
Chroma Dentine	CDA1	CDA2	CDA3	CDA3.5	CDA4	CDB1	CDB2	CDB3	CDB4	CDC1	CDC2	INC3	INC4	IND2	IND3	IND4
Increaser			INC	INC	INC			INS	INS		INT	INT	INT	INT	INT	INT
Dentine	DA1	DA2	DA3	DA3.5	DA4	DB1	DB2	DB3	DB4	DC1	DC2	DC3	DC4	DD2	DD3	DD4
Incisal	S1	S1	S2	S2	S4	S1	S1	S2	S4	S1	S3	S3	S3	S1	S2	S2
Mamelon, Secondary Dentine	MD1	MD1	SD2	SD2	SD2	MD2	MD2	MD3	MD3	MD2	SD1	SD2	SD2	MD1	MD3	MD1
Value	VL1	VL2	VL3	VL4	VL4	VL1	VL2	VL3	VL4	VL1	VL2	VL3	VL4	VL2	VL3	VL4
Opal Incisal	OS1	OS1	OS2	OS2	OS4	OS1	OS1	OS2	OS4	OS1	OS3	OS3	OS3	OS1	OS2	OS2
Shoulder Ceramics HM/M	1	1	2	2	6	3	3	4	4	1	1	6	6	1	2	4

All stains and liquids can be used for HeraCeram, HeraCeram Saphir, HeraCeram Zirkonia and HeraCeram Zirkonia 750.

Firing programmes of other furnaces are provided in the downloadsection on Kulzer webpage kulzer.com

kulzer.com/firingprograms-hcsaphir

HeraCeram® Saphir

Firing programmes.

General Firing Programme									
	NP-Primer ¹	Paste Opaque	Shoulder Ceramic HM1	Shoulder Ceramic HM2	1 st Dentine	2 nd Dentine	Glaze/Stains universal	Correction Material	Shoulder Ceramic LM
Preheating or starting temperature: [°C]	600	600	600	600	600	600	600	600	600
Drying: [min]	3	6	4	3	5	5	5	4	4
Preheating: [min]	1	1	2	2	2	2	1	2	2
Temperature increase: [°C/min]	100	100	100	100	100	100	100	100	100
Final temperature: [°C]	950	880	870	860	860	850	850	810	790
Holding time: [min]	1	1	1	1	1	1	0.5–1	1	1
Vacuum start: [°C]	600	600	600	600	600	600	–	600	600
Vacuum stop: [°C]	950	880	870	860	860	850	–	810	790

Heramat C/C2/C3/C3 press									
	NP-Primer ¹	Paste Opaque	Shoulder Ceramic HM1	Shoulder Ceramic HM2	1 st Dentine	2 nd Dentine	Glaze/Stains universal	Correction Material	Shoulder Ceramic LM
Start [°C]	600	600	600	600	600	600	600	600	600
DRY [min]	3:00	6:00	4:00	3:00	5:00	5:00	5:00	4:00	4:00
Pre Heat [min]	1:00	1:00	1:00	1:00	2:00	2:00	1:00	2:00	2:00
Heat Rate [°C/min]	100	100	100	100	100	100	100	100	100
High Temp [°C]	950	880	870	860	860	850	850	810	790
Hold [min]	1:00	1:00	1:00	1:00	1:00	1:00	0:30 – 1:00	1:00	1:00
Temper [°C]	–	–	–	–	–	–	–	–	–
Temp Hold [min]	–	–	–	–	–	–	–	–	–
Cool Time [min]	–	–	–	–	–	–	–	–	–
V On [°C]	600	600	600	600	600	600	–	600	600
V Off [°C]	950	880	870	860	860	850	–	810	790
V Hold [min]	–	–	–	–	–	–	–	–	–

PLEASE NOTE: The firing temperatures quoted here are guidelines only. Deviations may occur due to differences in furnace performance and may have to be compensated for if necessary.

¹ = Only when veneering non-precious metal-ceramic alloys.

Austromat 3001/Press-i-dent												
NP-Primer ¹	C600	T120•L9	T60	V9	T099•C950	V0	T60	C0	L0	T2	C600	
Paste Opaque	C600	T360	T60•L9	T60	V9	T099•C880	V0	T60	C0	L0	T2	C600
Shoulder Ceramic HM1	C600	T180	T60•L9	T60	V9	T099•C870	V0	T60	C0	L0	T2	C600
Shoulder Ceramic HM2	C600	T120•L9	T60	V9	T099•C860	V0	T60	C0	L0	T2	C600	
1 st Dentine	C600	T180•L9	T120	V9	T099•C860	V0	T60	C0	L0	T2	C600	
2 nd Dentine	C600	T180•L9	T120	V9	T099•C850	V0	T60	C0	L0	T2	C600	
Glaze/Stains universal	C600	T300•L9	T60	V9	T099•C850	V0	T30	C0	L0	C600		
Correction Material	C600	T120•L9	T120	V9	T099•C810	V0	T60	C0	L0	T2	C600	
Shoulder Ceramic LM	C600	T120	T60•L9	T60	V9	T099•C790	V0	T60	C0	L0	T2	C600

Austromat M										
	NP-Primer ¹	Paste Opaque	Shoulder Ceramic HM1	Shoulder Ceramic HM2	1 st Dentine	2 nd Dentine	Glaze/Stains universal	Correction Material	Shoulder Ceramic LM	
START	600	600	600	600	600	600	600	600	600	
→	0	0	0	0	0	0	0	0	0	
↑	2	6	3	2	3	3	5	2	3	
→	1	1	1	1	2	2	1	2	1	
VAC	9	9	9	9	9	9	–	9	9	
°C ↗ _{min.}	99	99	99	99	99	99	99	99	99	
END	950	880	870	860	860	850	850	810	790	
→	1	1	1	1	1	1	0.5 – 1	1	1	
i ↘	0	0	0	0	0	0	0	0	0	
↘ ²	0	0	0	0	0	0	0	0	0	

1 = Only when veneering non-precious metal-ceramic alloys.

HeraCeram® Saphir

Firing programmes.

Austromat 624/654 press-i-dent											
	NP-Primer ¹			Paste Opaque (1st + 2nd)			Shoulder Ceramic HM1			Shoulder Ceramic HM2	
Drying	00:00			00:00			00:00			00:00	
Closing Time	02:00			06:00			03:00			05:00	
Pre heat	600°C	01:00		600°C	01:00		600°C	01:00		600°C	01:00
High Temp	950°C	99°C/min	01:00	880°C	99°C/min	01:00	870°C	99°C/min	01:00	860°C	99°C/min 01:00
Temper											
Cooling											
VAC	100%			100%			100%			100%	

	1st Dentine			2nd Dentine			Glaze/Stains universal			Correction Material COR		Shoulder Ceramic LM	
Drying	00:00			00:00			00:00			00:00		00:00	
Closing Time	03:00			03:00			05:00			02:00		03:00	
Pre heat	600°C	02:00		600°C	02:00		600°C	01:00		600°C	02:00	600°C*	01:00
High Temp	860°C	99°C/min	01:00	850°C	99°C/min	01:00	850°C	99°C/min	00:30-01:00	810°C	99°C/min 01:00	790°C	99°C/min 01:00
Temper													
Cooling													
VAC	100%			100%			0%			100%		100%	

¹ Only when veneering non-precious metal ceramic alloys.

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kulzer.com/firingprograms-hcsaphir



HeraCeram FAQs



kulzer.com/heraceram-faq

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HeraCeram® Stains universal

A range of stains for universal applications

Stain Set, universal.

The Stains universal set includes 22 Stains (2 ml) and a Glaze paste (2 ml).

Contents

- 17 x 2 ml Individual Stains
- 3 x 2 ml Body Stain BS-A; BS-B; BS-C
- 2 x 2 ml Enamels EN Pearl; EN Opal
- 1 x 2 ml Glaze GL
- 1 x 2 ml Stain Liquid universal SLU
- 1 x Stain brush
- 1 x Glaze brush
- 1 x Shade guide
- Art. Code: 6605 2534
- In addition to the set, the Glaze is also available as a powder (20g).

Stain Set, universal, powder.

The Stains universal set includes 22 Stains (3g) and a Glaze (3g).

Contents

- 17 x 3 g Individual Stains
- 3 x 3 g Body Stain BS-A; BS-B; BS-C
- 2 x 3 g Enamels EN Pearl; EN Opal
- 1 x 3 g Glaze GL
- 1 x 2 ml Stain Liquid universal SLU
- 1 x Stain brush
- 1 x Glaze brush
- 1 x Shade guide
- Art. Code: 6605 8215
- In addition to the set, the Glaze is also available as a powder (20g).



Contact in Germany

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