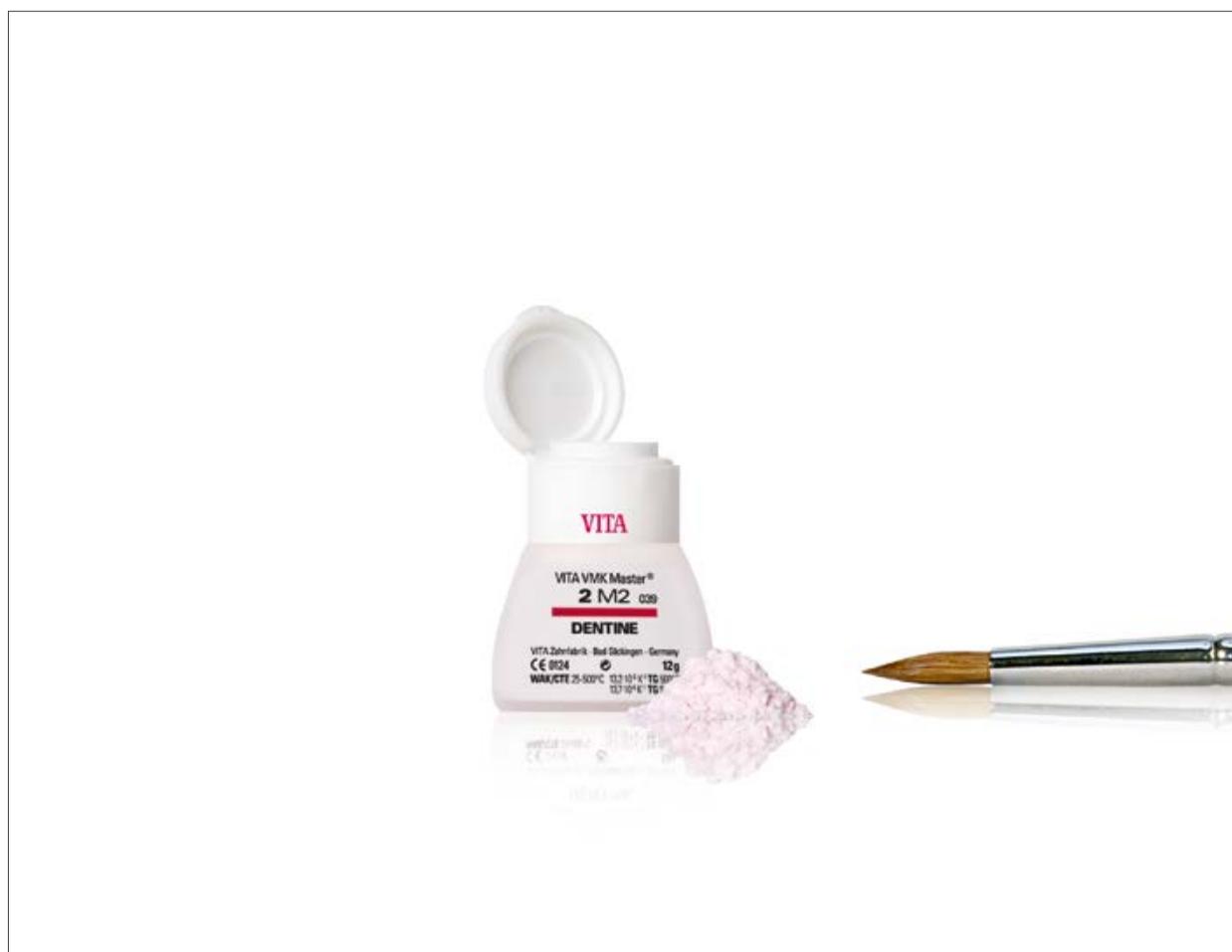


VITA VMK Master®

Instructions for use / Full version



VITA shade determination

VITA shade communication

VITA shade reproduction

VITA shade control

VITA – perfect match.

VITA

For veneering metal ceramic substructures
in the conventional CTE range (13.8–15.2).
Available in VITA SYSTEM 3D-MASTER®
and VITA classical A1–D4® shades.

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VMK – the success story continues **VMK 68 – VMK 95 – VMK Master®**

The first metal-ceramic system developed in Europe was launched by VITA Zahnfabrik in 1962.

The VMK (**VITA Metall Keramik**) system, that is still in use today, includes dental ceramic materials from VITA Zahnfabrik which were fired to a precious metal alloy by Degussa Co.

Increasing demands on the functionality and esthetics of metal ceramic restorations, provide us with the opportunity to develop materials which not only provide numerous individualization options, but also achieve a convincing result with minimal effort.

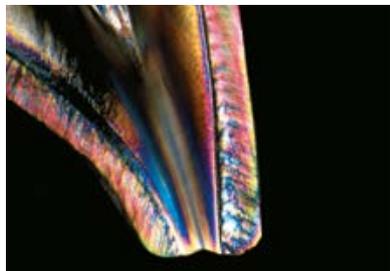
To ensure a well-balanced combination of advanced materials and easy handling, the very good processing characteristics of VMK 95 were combined with very good materials.

VITA VMK Master offers the user many possibilities to restore lost hard tooth substance in a natural and esthetic manner.

Based on a classic and proven layering method, the use of VITA VMK Master allows the user to fabricate restorations with a natural appearance. Any challenge can be met individually and a natural restoration obtained, thanks to the wide range of additional materials.

VITA VMK MASTER is a veneering ceramic for metal substructures made of high gold content, reduced gold content or palladium-based alloys in the conventional CTE range. The ceramic is particularly suitable for veneering non-precious metal substructures, thanks to its firing temperature and chemical-physical properties.

VITA VMK Master is available in VITA SYSTEM 3D-MASTER and the original VITA classical A1-D4 shades.



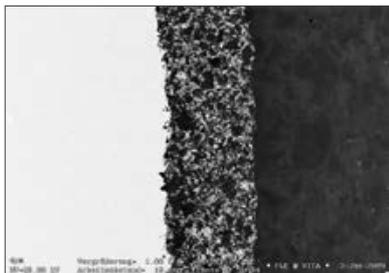


Fig. 1: SEM picture of the very homogeneous VITA VMK Master opaque structure

Figures 2 and 3 show a fired opaque material. The dark layer is the fired ceramic and the light one is the metal substructure.

The highly homogeneous opaque layer of VITA VMK MASTER between these two layers can be seen in Figure 2. Uniform distribution of the individual opaque components can be clearly recognized.

Thanks to a special processing step, a very homogeneous structure of the opaque can be achieved. Bonding to the metal alloy can also be considerably improved by the homogeneous distribution. The application behavior was optimized to ensure that a creamy consistency is obtained after mixing with the opaque liquid. The mixed opaque can be agitated onto the sandblasted substructure even more easily and the homogeneous, creamy surface eliminates the formation of bubbles. Bonding to the metal substructure is significantly simplified and improved.

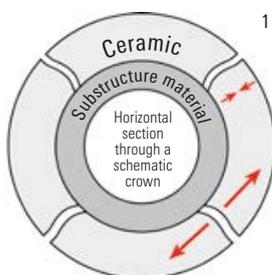
Our practical experience in the CTE range of $13.8\text{--}15.2 \cdot 10^{-6} \cdot \text{K}^{-1}$ has shown that good results can be achieved when the CTE of the alloy (measured at $25\text{--}600\text{ }^\circ\text{C}$) is within the range of $14.0\text{--}14.4 \cdot 10^{-6} \cdot \text{K}^{-1}$.

In the case of alloys with a CTE ($25\text{--}600\text{ }^\circ\text{C}$) $> 14.5 \cdot 10^{-6} \cdot \text{K}^{-1}$, slow cooling should be used from the first dentine firing, onwards.

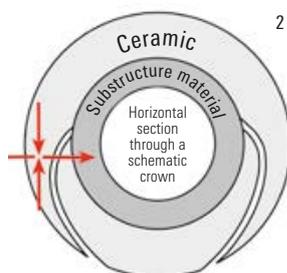
Normally the veneering ceramic is cooled down quickly at a temperature that it is viscous or liquid. During cooling, stresses can occur in the glass matrix because the outer layer cools down more quickly than the inner layer of the metal ceramic. As a result, the inner side of the veneering ceramic is exposed to tensile stress and the surface to compressive stress. If there are additional large differences in the CTE (alloys $> 14.4 \cdot 10^{-6} \cdot \text{K}^{-1}$), the stress that is normally formed during cooling can be minimized by slow cooling.

If the alloy has a higher thermal expansion coefficient, cooling from $900\text{ }^\circ\text{C} - 700\text{ }^\circ\text{C}$ should not be completed in less than three minutes.

If the CTE of the substructure material is considerably lower than the CTE of the veneering ceramic, tangential tensile stress will increase and form radial cracks that run to the outside. This may result in late cracks (Fig. 1).

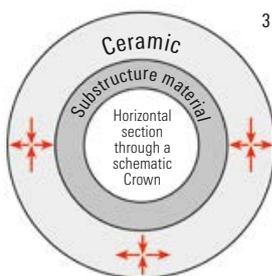


If the CTE of the substructure material is considerably higher than the CTE of the veneering ceramic, tangential compressive stress will increase and form cracks that run almost parallel to the substructure. This may result in chipping (Fig. 2).



The ideal tangential and radial tensile stress is ensured if the CTE of the ceramic has been optimally matched with the CTE of the substructure material (Fig. 3).

Optimal preconditions are given if the veneering ceramic features a somewhat lower CTE value than the substructure material. Due to adhesive bonding, the ceramic must follow the thermal behavior of the substructure material. If cooled down, the ceramic is exposed to slight tangential compressive stress.



When veneering a substructure material with ceramic, the layer thickness of the veneer, as well as the CTE value, is significant.

In addition, differences in strain (radial tensile stress) develop within the veneer, which can grow with increasing layer thickness.

Natural dentine exhibits various shades and degrees of opacity. Natural enamel, however, may be translucent and opaque. The shade effect is produced by reflection of light. Light is not only reflected on the surface, but due to the translucency of natural teeth, also from the depth. Translucent elements of teeth are also subject to ambient influences. The color impression can noticeably change through different lighting conditions.



The more translucent a body, the deeper light will penetrate into it and the greyer it will appear. If the opacity increases, the level of grey will decrease and the lightness will increase.



Translucency

transparent = pervious to light
translucent = milky, not transparent
opaque = impervious to light



Opalescence

opal-like, reddish-bluish iridescence
Appears to be reddish in transmitted light and bluish in incident light



Fluorescence

Property of some materials to shine after exposure to light. Dental ceramics are colored with bluish-whitish fluorescences and subsequently have a blue-white or yellow-green glow, for example. This phenomenon can be clearly observed in black light, diffused light (fog) and sunlight.

Firing temperature

The firing result obtained with dental ceramics depends to a great extent on the individual user's firing procedure and substructure design.

The type of furnace, the location of the temperature sensor, the firing trays and the size of the workpiece during the firing cycles are important for the firing result.

Our application-technical recommendations for the firing temperatures (regardless of whether they have been provided orally, in writing or in the form of practical instructions) are based on extensive experience and tests. The user, however, should consider this information only as a reference. If the surface quality or the degree of transparency or glaze does not correspond to the firing result that is achieved under optimum conditions, the firing procedure must be adjusted accordingly. The crucial factors for the firing procedure are not the firing temperature displayed by the furnace, but the appearance and the surface condition of the ceramic after the firing process.

⚠ Note: Firing trays may also have significant influence on the result.

All firing temperatures for VITA VMK Master are based on the use of black ceramic firing trays. When using light firing trays, the temperature must be raised by 10 – 20 °C, depending on the type of furnace that is used.

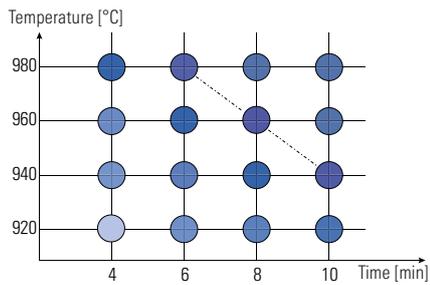


Fig. 1: Schematic view of the fired firing samples

In addition to the firing temperature, the correct firing degree of the veneering ceramic depends on other parameters such as:

- Predrying temperature and time
- Heat-up time until firing temperature is reached
- Holding time of the ideal firing temperature
- Vacuum (level and duration)
- Position of the firing object in the furnace

Figure 1 shows that firing samples with the same degree of firing can be prepared at different firing temperatures by changing the holding time and the heat-up time. Firing temperature and the heat-up times need to be adapted to the respective veneering ceramic and furnace.

This test clearly demonstrates that the same degree of firing can be achieved both with higher temperatures and shorter heat-up times and lower temperatures and longer heat-up times.

The temperature and the heat-up time for the furnace in use have been correctly adjusted if the firing sample is transparent and has an intensive shade and sharp edges. This can be recognized in the illustration along the diagonal from the upper left to the lower right. If the end temperature is too high, the sample will have a "greasy" gloss and rounded edges (to the right, above the diagonal). If the end temperature is too low and the heat-up time too short, the firing sample appears to be milky and "dull" (to the left, below the diagonal).



Fig. 2

During laboratory use, correct firing is indicated if the surface of the ceramic has a slight gloss (Fig. 2, to the right).

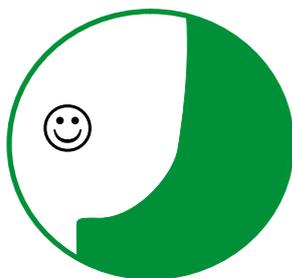
If the ceramic appears to be milky and non-homogeneous, the correct degree of firing could not be achieved (Fig. 2, to the left). If the desired result is not achieved, approach the correct firing temperature in steps of 5-10°C.



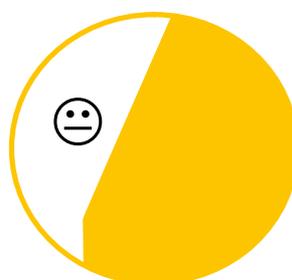
General information

A chamfer or shoulder with rounded inner angle should be prepared for crowns. The goal should be a circumferential cutting depth of approx. one millimeter. The vertical preparation angle should not exceed 3°. All transitions from the axial to the occlusal or incisal surfaces should be rounded. Uniform and smooth surfaces are recommended.

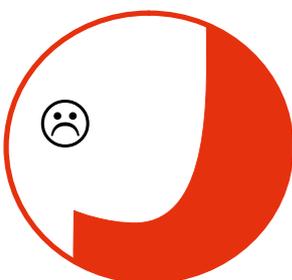
Shoulder preparation or chamfer preparation

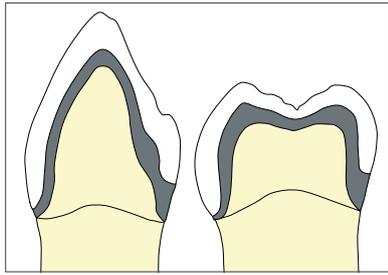


Tangential preparation - contraindicated for ceramic shoulders



Incorrect chamfer preparation - generally contraindicated



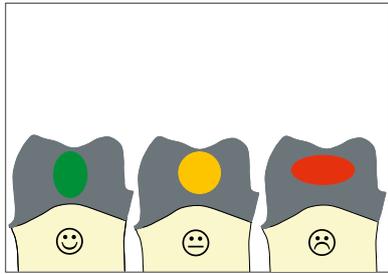


Substructure design

The substructure reflects the shape of the tooth in a reduced size (design supporting the tooth shape). It must be ensured that the ceramic material is applied in a uniform layer thickness (max. 2 mm).

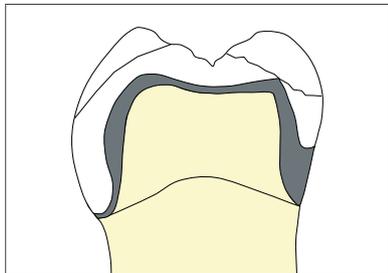
During the application, the requirements for the various alloys must be observed:

- Substructures with insufficient dimensions cause higher shrinkage of the veneering ceramics and require additional firing processes.
- Substructures with insufficient dimensions do not provide adequate support for the veneering ceramic, which may result in cracks and chipping in the case of very thick layers.



Cross-section of connectors

The cross-section of the interproximal connectors has a major influence on the stability of the restoration. As a result, depending on the alloy used, the cross-section of interproximal connectors must have adequate dimensions!

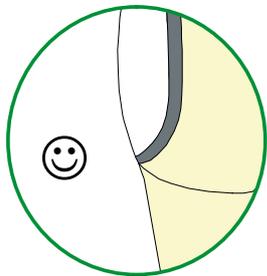


Crown substructures and bridge units to be veneered with ceramic materials must be designed in a way to ensure that wall thicknesses of crowns are at least 0.3 mm, and wall thicknesses of bridges are at least 0.5 mm.

For more information, refer to the working instructions of the respective alloy.

If minimum thicknesses of substructure and connector are not observed, stress, deformation and chipping may result. Additionally, adequate support by metal must be ensured.

Sharp edges and insufficient wall thicknesses should generally be avoided.

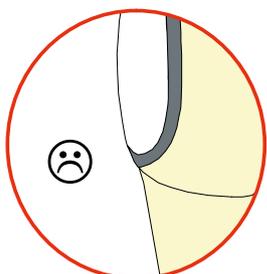
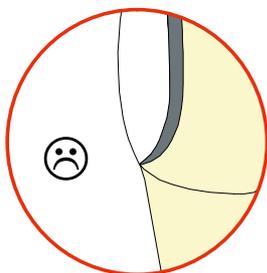


Design of a metal margin

The transition area of the metal substructure to the veneering material must be clearly defined and a right angle should be prepared whenever possible.

Transitions between metal and veneering ceramic should not be in the vicinity of contact points and on occlusal surfaces.

When preparing the interdental space, the transition should be designed in a way to allow easy cleaning.





The modelled bridge substructure from the labial side: the interproximal connectors are located at the level of the contact points and should be designed in a way to enable the fabrication of highly esthetic restorations and allow careful hygiene.



To achieve sufficient stability between the bridge pontic and bridge abutments, a palatal or lingual collar is recommended. In addition, in order to ensure uniform cooling of the bridge pontic, which absorbs most of the heat, cooling fins are beneficial.



Cross-cut tungsten carbide burs are recommended for finishing.



After removal of the investment material, the cast substructure must be ground from all sides before firing on the ceramic material, to ensure a perfectly clean surface.



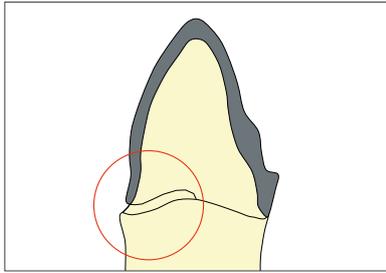
After finishing, the substructure needs to be carefully sandblasted with aluminium oxide (Al_2O_3). To avoid inclusions of abrasive material, it is recommended to sandblast the alloys with the indicated pressure, while keeping the nozzle at a flat angle to the object surface.

The pressure and the particle size to be used depend on the type of alloy. Then the substructure must be cleaned with a brush under running water or using a steam jet.

⚠ Note: Use only pure Al_2O_3 for sandblasting the alloy surface. A contaminated metal surface may result in the formation of bubbles during ceramic firing. Please observe the information in the working instructions of the manufacturer of the respective alloy. Sandblasting improves the mechanical bond. As a result, the surface of the object is roughened and considerably enlarged.



Substructure after finishing to prepare a ceramic shoulder.



When fabricating ceramic shoulders, it must be ensured that the substructure (not the veneer) is supported by the prepared tooth (stump). The substructure is reduced exactly to the inner edge of the chamfer or shoulder preparation. This way, functional support of the substructure is achieved.



To achieve perfect, esthetic integration of the crown into the relevant esthetic areas and to avoid shadow areas, sufficient reduction of the substructure, in particular in the interproximal area, is required. Make sure to obtain a round and thin metal edge after the reduction.

To achieve even contours, it is recommended to use a pen to mark the reduction of the shoulder on the substructure (black line in the figure).



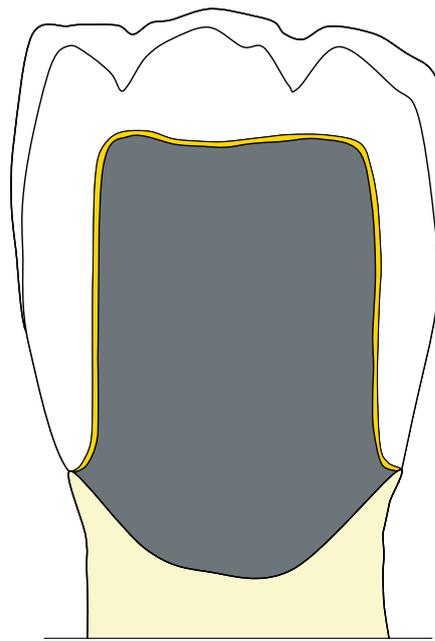
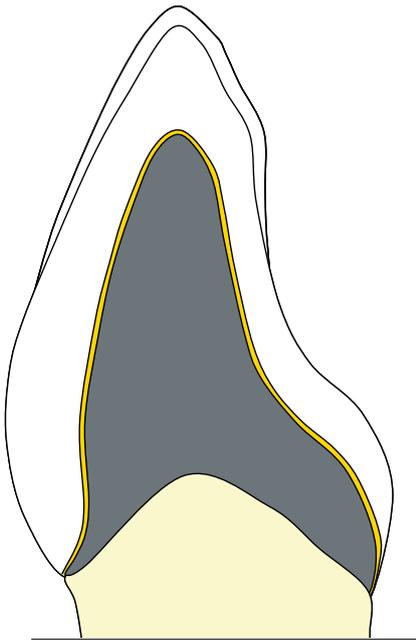
Completely reduced crown.

⚠ **Note:** It must be ensured that the shoulder is adequately supported by the metal substructure.



Substructure sandblasted with Al₂O₃.

Also compare with the information on the preparation of the bridge substructure.



To mask the shade of the alloy and to ensure perfect bonding to the metal substructure, opaque material is applied. The important element in the chain of processes is the combination of washbake and opaque firing, which has a decisive influence on the quality of the bond. The opaque material is used to create the basis of the shade of an esthetic restoration.

Note: To produce a more intense and warmer shade, the respective OPAQUE can be mixed with Wash Opaque (WO). However, the final result of the restoration may differ from the shade sample.

Gold-colored wash opaque and the respective opaque material (OP) are available for the washbake.

One opaque material is required for reproducing the VITA SYSTEM 3D-MASTER shades (one for each lightness level) and the VITA classical A1–D4 shades (one for each shade).

WO and OP have the same chemical-physical properties and are perfectly suitable for the washbake.

Function - washbake:

- Obtaining the bonding oxides and supporting the chemical bond
- Creating ceramic zones on the metal surface and strengthening the retentions for the ceramic
- Coloring

Three variations are available for the application of the wash opaque or opaque materials:

- Powder: the opaque powder is mixed with the VITA OPAQUE FLUID and applied to the clean and dry substructure using a brush or glass instrument.
- Pastes: the opaque paste is supplied in a ready-to use consistency. It can also be applied with a brush or a glass instrument.

Note: Pastes must be stirred with an instrument before they are used. If the paste can no longer be stirred after extended storage, the original consistency can be restored by adding a specific quantity of VITA PASTE FLUID. Please make sure that the paste opaque will not come into contact with water to avoid the formation of bubbles and cracks in the opaque during firing.

- VITA SPRAY-ON technique: the opaque powder is mixed with VITA SPRAY-ON LIQUID in the respective glass jar and then sprayed evenly onto the substructure surface. Please observe the information in the separate working instructions for VITA SPRAY-ON (No. 492).



The substructure has been pretreated and oxidized in accordance with the parameters given by the alloy manufacturer.

The information of the respective alloy manufacturer must be observed!

Prior to further processing, clean the metal substructure under running water using a brush and then clean it thoroughly with steam. Let the substructure dry completely after cleaning.



⚠ Note: After cleaning, the substructures must not be picked up with the fingers, but with clean tweezers or clips.

Washbake

A thin coat of WASH OPAQUE paste must be brushed on the surface of the substructure and an extended predrying time is required for drying the paste.

Alternatively, the mixed WASH OPAQUE powder can be applied thinly and evenly (semi-masking) on the bridge substructure or sprayed on thinly using the VITA SPRAY-ON technique. Please make sure not to apply a first layer too thick.

Recommended firing - washbake

	Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
Paste	500	6.00	5.45	80	960	1.00	5.45
Powder	500	2.00	5.45	80	960	1.00	5.45



Completely fired wash opaque.

⚠ Note: Substructures which reveal considerable formation of oxides need to be cleaned with a toothbrush under running water or with the steam jet after each firing process.



OPAQUE firing

Mix the opaque powder to a creamy consistency with OPAQUE FLUID, apply with a brush or glass instrument to mask the surface to be veneered and fire as recommended. Opaque paste is applied in the same way to mask the surface of the clean and dry substructure or, alternatively, sprayed on with VITA SPRAY-ON.

Avoid excessive condensation and thick opaque layers from flowing into the occlusal, approximal or marginal areas, especially when fabricating bridges. Thick opaque layers may crack during firing.

Before opaque firing, it must be ensured that the material is applied evenly and the entire metal substructure is adequately covered.

After firing, the metal structure must be fully masked; if required, the opaque must be applied and fired again.

Recommended firing - OPAQUE firing

	Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
Paste	500	6.00	5.38	80	950	1.00	5.38
Powder	500	2.00	5.38	80	950	1.00	5.38

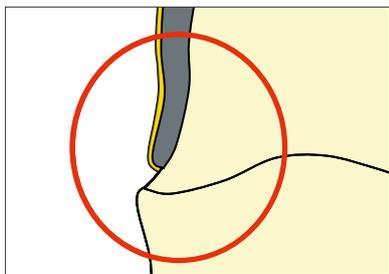


⚠ Note: Problems can also occur if the opaque is dried too quickly. If the recommended predrying and drying times are not adhered to, small cavities may form or the opaque may flake off. In such cases, the opaque liquid or the paste were converted too quickly from the liquid to the gaseous state.

The correct surface of the fired opaque exhibits a slight "eggshell" luster.



The WASH material is applied in the same way as it is for a bridge.



Difference to the opaque firing

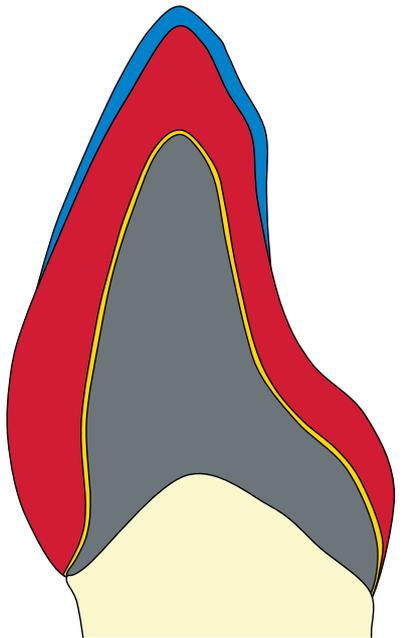
To achieve good bonding to the shoulder material, the opaque needs to be applied across the reduced metal margin (see graphic).

⚠ **Note:** Excess opaque material must not penetrate into the crown or it may affect the fit.



Substructure with completely applied opaque - prepared for the application of the shoulder material.

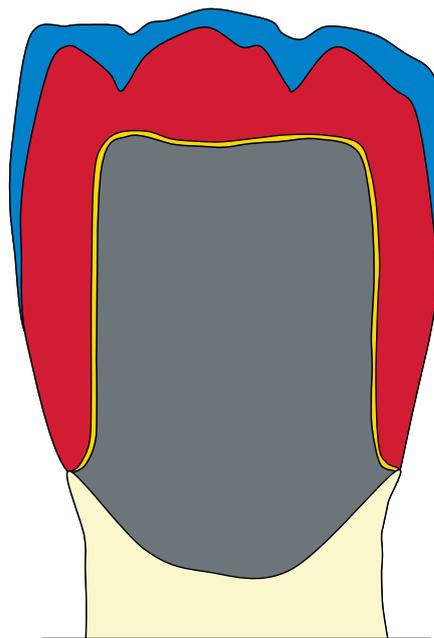
The application of a shoulder material is explained in the section "Application of a ceramic shoulder."



The shade sample can be reproduced using the STANDARD layering, comprising the DENTINE and ENAMEL materials. These materials are mixed with VITA MODELLING FLUID or VITA MODELLING FLUID RS.

VITA MODELLING FLUID avoids rapid drying of the ceramic material. The fluid increases the plasticity during layering. The smooth consistency of the red RS fluid allows extended and wet processing and ensures good stability, making the fluid particularly suitable for large-sized restorations and multi-unit bridges.

If only minimal space (< 0.6mm) is available, the shade effect can be enhanced by the use of OPAQUE DENTINE.



OPAQUE DENTINE can also be used to avoid loss in color of the pontics, in particular in the area of the gingiva. It is also suited to reproduce areas with intense shades, such as occlusal surfaces of molars.

When veneering with VITA classical A1–D4 shades, NECK materials can be used to support the shade reproduction in the cervical area.

Since natural teeth frequently exhibit higher chroma in the gingival area, NECK materials are also suitable to achieve such higher chroma (intensity) and opacity.



Bridge coated with opaque on the model.



To allow easy removal of the restoration, it is recommended to insulate the model with VITA Modisol before placing the restoration.



OPAQUE DENTINE

To avoid differences in the shade of abutment crowns and pontics, OPAQUE DENTINE is applied to the basal surface and the cervical area of the pontic.



Frequently, cuspids do not provide sufficient space for dentine and enamel materials. Therefore a thin layer of OPAQUE DENTINE is applied in this area to ensure that the correct shade is maintained, in particular for layer thicknesses below 0.8 mm.



DENTINE

Starting from the mesial and distal ridges ...



... the complete tooth shape is built up in DENTINE.
This provides a good orientation with regard to the size, shape and position of the teeth.



A thin layer of DENTINE is applied on the layer of OPAQUE DENTINE that has already been applied to the cuspid, and the shape is completed.



To obtain sufficient space for the enamel, the DENTINE is reduced in the incisal third.



To achieve a uniform level of moisture, the material should be carefully wetted with a brush in the interproximal areas from the palatal side before the enamel material is applied. It is not necessary to wet the material from both sides since the modelling fluid is spread across the entire interproximal area, thanks to the capillary effect.
The resulting adhesion forces are obtained, as a result of perfectly adjusted particle distribution in the material structure.



ENAMEL

To complete the crown shape, enamel is applied in small quantities.



To compensate firing shrinkage, the bridge must have a slightly larger size.



Using a slightly wetted separating knife ...



... the individual units of the bridge are separated interproximally down to the opaque, prior to the first dentine firing.



After removing the bridge from the model, the contact points need to be completed using DENTINE and ENAMEL.

Then the bridge is placed on a firing tray for the subsequent firing process.

Recommended firing - first dentine firing

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	6.00	7.49	55	930	1.00	7.49



After firing, the bridge is placed on the model and the contact points are adjusted.



A diamond disc is used to separate the interproximal areas after the first dentine firing.



A small diamond tool is used for minor adjustments of the shape.

Prior to the second dentine firing, grinding particles must be carefully removed from the restoration.

It is recommended to clean the substructure with steam.



Second dentine firing

First, the interproximal areas are filled with DENTINE.

Once the interproximal areas have been slightly condensed, the basal surface of the pontic is filled with OPAQUE DENTINE.

⚠ **Note:** To avoid drying of the materials applied in the interproximal areas, it is recommended to wet the interproximal areas with VITA MODELLING FLUID RS or VITA INTERNO FLUID when fabricating large-span bridges.



It is recommended to insulate the bridge with VITA Modisol before it is placed on the model. This way, any material applied in the basal area will not stick to the model.



Corrections of the shape are carried out starting from the neck using DENTINE ...



... and ENAMEL.

Recommended firing - second dentine firing

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	6.00	7.38	55	920	1.00	7.38

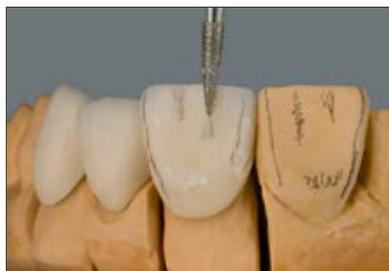


The contact points are checked again.



Finishing the marginal ridges using a fine diamond tool.

⚠ **Note:** The contours of the ridges were marked with a pen for enhanced control.



Then, a natural surface structure is prepared, for example, with growth lines and convex and concave areas.



Before processing is continued, grinding particles are carefully removed from the restoration using a toothbrush under running water or the steam jet.



If required, the entire restoration can be coated with VITA AKZENT PLUS GLAZE.



VITA AKZENT PLUS stains are available to create shade nuances and individual characteristics.

Recommended firing - glaze firing VITA AKZENT® PLUS

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	4.00	5.15	80	920	1.00	–



Completed restoration after glaze firing.

Corrections after glaze firing

For corrections after glaze firing, the CORRECTIVE material features a clearly lower firing temperature. The contours of the completed restoration will no longer be affected at this temperature.

Recommended firing - CORRECTIVE

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	6.00	6.33	55	860	1.00	6.33

The ceramic shoulder supports the natural effect of light in the transition area from the prepared tooth to the gingiva. The gingival margin of conventional metal-ceramic restorations, which is frequently grey, can on rare occasions, be attributed to metal that is shining through, but in most cases, is due to the shadow caused by the missing light effect of the gingiva. Thanks to high fluorescence, VITA shoulder (MARGIN) materials support the natural distribution of light in the gingival area.

The MARGIN powders feature plastification that clearly differs from all other VITA VMK Master powder materials. Thanks to the patented procedure for the manufacture of VITA shoulder (MARGIN) materials, the veneering ceramic can be processed in a similar way as acrylic materials. The plasticity of the mixed material is almost identical to that of veneering resins/composites so that a spatula is perfectly suitable for the application.



Thanks to plastification, no special liquid is required for mixing. The material is mixed with the VITA MODELLING FLUID enclosed in the assortment. To achieve a homogeneous mixing ratio of the MARGIN materials, it is recommended to mix the powders first (see "Classification tables").

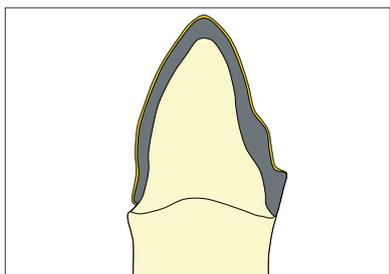


The modelling fluid is repelled, due to plastification of the MARGIN materials (hydrophobic effect).



Therefore, the material must be mixed with the liquid using a spatula to obtain a dough-like consistency.

⚠ **Note:** The use of an ever-wet tray is not recommended, since the capillary effect of the tray may be adversely affected by the plastification. Dried MARGIN material can not be mixed again.



The opaque material is applied as shown in the figure. Also, see the information in the section "Application of the opaque for a ceramic shoulder."

It is recommended to seal the plaster die before the shoulder materials are applied.



Then the dry and pretreated die is carefully insulated with VITA Modisol and the prepared coping is placed on the model.

⚠ **Note:** Make sure that the surface to be veneered will not come into contact with the insulating agent.



Opaque-coated coping on the model.



It is recommended to apply and evenly spread the material (dough-like consistency) using a plastic or ceramic spatula before the first MARGIN firing is carried out.



The material should be slightly condensed on the model.



To ensure accurate fit after firing, the shoulder material must not be applied beyond the preparation margin. Consequently, any excess material must be removed. Then the crown is completely dried with a hair dryer or with radiated heat at the furnace chamber.

Note: Excess liquid cannot be absorbed using a paper towel.

Recommended firing - MARGIN firing

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	6.00	8.00	55	940	1.00	8.00



Check the shoulder area in the inside of the crown, and if required, carry out minor corrections without exerting any pressure. Then place the fired crown carefully on the model.



The model is insulated with VITA Modisol again. A creamy consistency is required for a second firing process.



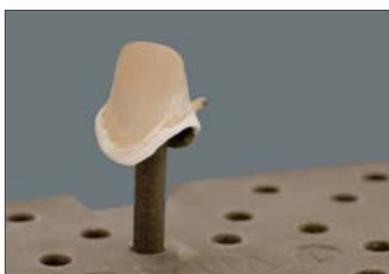
Use a brush to apply small amounts of material to the bottom of the shoulder and place the crown (coping) on the model.



Then build up the missing areas by carefully applying the shoulder material in the space resulting from the first shoulder firing, providing optimum accuracy of fit of the ceramic shoulder. Then the shoulder is completed.



Samples of the shoulder materials



Dry the coping (crown) as described. Carefully remove it from the model and place it on a ceramic firing tray.

⚠ **Note:** The shoulder (MARGIN) material must not come into contact with the firing tray.

Recommended firing - MARGIN firing

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	6.00	8.00	55	940	1.00	8.00

After the second MARGIN firing, the fired coping may have to be adjusted to the model.



Completely fired shoulder on the model.

⚠ **Note:** Individual layering is based on the natural residual teeth of the patient. Accordingly, the following layering procedure is only an example.

An overview of the materials described in the following can be found in the section "Explanation of the materials" on pages 40 and 41.



The coping prepared with shoulder material.



LUMINARY

A thin coat of LUMINARY materials is applied (similar to the application of an OPAQUE DENTINE material) to increase the fluorescence. This way, adequate support of the shoulder material applied in the neck area is achieved. These materials ensure good coverage of the opaque in thin areas.

⚠ **Note:** To cover the incisal crown coping, the LUMINARY materials can be applied slightly beyond the edge.



Samples of the LUMINARY materials

Recommended firing - LUMINARY firing

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	6.00	8.00	55	940	1.00	8.00



The coping fired with LUMINARY ...



... under black light.



DENTINE

The dentine body is built up step-by-step until the desired shape is obtained.



For this purpose, depending on the tooth shade, various DENTINE materials can be used to achieve natural light refraction.

⚠ **Note:** To compensate for shadow areas, a dentine material of the next lightness level, or in thin areas, a DENTINE with higher chroma can be used.



TRANSLUCENT/ENAMEL

The incisal or approximal length of the crown can already be determined with translucent materials. The alternating layers support the natural reflection of the crown, and also brings light into the restoration. The application of the incisal DENTINE MODIFIER materials is facilitated.



DENTINE MODIFIER

A mamelon structure is created in the incisal area using DENTINE MODIFIER materials and the shade of specific areas is intensified.

The DENTINE MODIFIER materials can be washed-in during the unmixed state, or mixed with DENTINE.



Samples of the DENTINE MODIFIER materials



ENAMEL

To obtain lighter shades of mesial and distal areas, ENAMEL materials are applied. Darker rear areas of misaligned teeth can be adjusted.



Intermediate firing based on the parameters of the first dentine firing is recommended for visual control of an individual layering.

Recommended firing - first dentine firing (intermediate firing)

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	6.00	7.49	55	930	1.00	7.49



CERVICAL

Apply CERVICAL material in the body area to complete the crown shape.
As a result, the effect of depth is increased in this area.
The CERVICAL materials add a warm shade to the crown.



Samples of the CERVICAL materials



ENAMEL/TRANSLUCENT

Incisal layering is carried out by applying alternating layers of different ENAMEL (EN) and TRANSLUCENT (T) materials.

The alternating layers of various translucent materials support the natural refraction of light of the crown and create various shade reflections.



Samples of the TRANSLUCENT materials

Recommended firing - first dentine firing

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	6.00	7.49	55	930	1.00	7.49



Crown fitted after first dentine firing.



The final shape can be obtained by using TRANSLUCENT (T), OPAL TRANSLUCENT (OT) or PEARL TRANSLUCENT (PLT) materials. The use depends on the patient's age and the individual appearance of the residual teeth.

⚠ **Note:** T6 and T8 have an intense shade and may influence the shade result considerably.

Recommended firing - second dentine firing

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	6.00	7.38	55	920	1.00	7.38



The diamond abrasive tools and rubber polishers used for processing.



Following the example of the natural tooth, the surface structure is contoured.



Especially in older patients, it is recommended to smooth ridges or anomalies with a rubber polisher prior to glaze firing.

Recommended firing – glaze firing

Pre-dry. °C	→ min.	↗ min.	↗ °C/min.	Temp. approx. °C	→ min.	VAC min.
500	0.00	5.15	80	920	1.00	–

For glaze firing, the degree of gloss and the structure of the surface can be controlled by the temperature rise rate, the end temperature and the holding time. Surface treatment and preparation before firing are additional factors of influence. Accordingly, the information on glaze firing can only be used as a reference. Mechanical polishing is also possible to achieve different degrees of gloss. Diamond-coated rubber polishers, high-gloss polishers, pumice, etc. are suitable for mechanical polishing.



Completed crown with natural gloss (without the use of glaze material).

	Pre-dry. °C	 min.	 min.	 °C/min.	Temp. approx. °C	 min.	VAC min.
Oxide firing	Please observe alloy manufacturer's instructions!						
WASH bake	500	2.00	5.45	80	960	1.00	5.45
PASTE WASH bake	500	6.00	5.45	80	960	1.00	5.45
OPAQUE firing	500	2.00	5.38	80	950	1.00	5.38
OPAQUE PASTE firing	500	6.00	5.38	80	950	1.00	5.38
MARGIN firing	500	6.00	8.00	55	940	1.00	8.00
LUMINARY firing	500	6.00	8.00	55	940	1.00	8.00
Stains fixation firing	500	4.00	4.45	80	880	1.00	4.45
1. dentine firing	500	6.00	7.49	55	930	1.00	7.49
2. dentine firing	500	6.00	7.38	55	920	1.00	7.38
Glaze firing	500	0.00	5.15	80	920	1.00	–
Glaze firing VITA AKZENT PLUS	500	4.00	5.15	80	920	1.00	–
Corrective firing with COR	500	6.00	6.33	55	860	1.00	6.33

Please note:

The firing result obtained with dental ceramics depends to a great extent on the individual user's firing procedure and substructure design. The type of furnace, the location of the temperature sensor, the firing trays and the size of the workpiece are important factors for the firing result.

If the surface, transparency or degree of gloss does not correspond to the firing result that is achieved under optimum conditions, the firing procedure must be adjusted accordingly. The crucial factors for the firing procedure are not the firing temperature indicated on the furnace display, but the appearance and the surface quality of the firing object after firing.

Our application recommendations for the firing temperatures (regardless of whether they have been provided orally, in writing or in the form of practical instructions), are based on extensive experience and tests. The user, however, should consider this information only as a reference.



VITA VACUMAT® 6000 M

The new modular firing system offers custom, individual furnace combinations and is very economically efficient. The system includes the premium furnace VITA VACUMAT 6000 M, two freely selectable control units (vPad comfort and vPad excellence), which enable up to four furnaces to be controlled with one control unit and a variety of accessories.

Available in a modern, compact and ergonomic design, the fully automatic VITA VACUMAT 6000 M for all dental ceramic firings, offers consistent firing results with convincing quality, thanks to the innovative firing technology.

Explanation of the firing parameters:

- | | |
|---|---|
| Predry. °C | Start temperature |
|  min. | Pre-drying time in minutes, closing time |
|  min. | Heating time in minutes |
|  °C/min. | Temperature rise rate in degrees Celsius per minute |
| Temp. approx. °C | End temperature |
|  min. | Holding time for end temperature |
| VAC min. | Vacuum holding time in minutes |



VITA Linearguide 3D-MASTER® / VITA Toothguide 3D-MASTER®

With the VITA Linearguide 3D-MASTER or the VITA Toothguide 3D-MASTER, you can determine the correct tooth shade quickly and precisely. Clear organization of the shade samples based on lightness, chroma and hue, enables quick determination of the suitable 3D-MASTER shade. The VITA Linearguide 3D-MASTER is an alternative to the proven VITA Toothguide 3D-MASTER. It features a different linear and systematic arrangement of the shade sample teeth, so that the suitable tooth shade can be quickly and safely determined in just two steps.



VITA Easyshade® V

VITA Easyshade V is a digital shade measurement device for determining the shade of natural dentition, bleached teeth and ceramic restorations precisely, quickly and independently of the ambient environment. The measurement results are displayed in the established standard shade systems VITA classical A1–D4 and VITA SYSTEM 3D-MASTER, as well as in the form of VITABLOCS shades and bleached shades, in accordance with the American Dental Association (ADA).



VITA classical A1–D4® shade guide

The original shade system: for the determination of the tooth shade in the VITA classical A1–D4 shades.

VITA VMK Master® shade indicators

Overview of shade samples of the materials included in the STANDARD assortment, such as OPAQUE, OPAQUE DENTINE, DENTINE and ENAMEL.

VITA VMK Master® shade guides

Prefabricated shade samples of the effect materials for the determination of individual shade characteristics.

VITA VMK Master® Classification tables

The classifications given below are only intended to provide reference values!

VITA SYSTEM 3D-MASTER Shades	OPAQUE	MARGIN	LUMINARY	NECK	CERVICAL	ENAMEL
0M1	OP0	M1	LM1	–	–	EN1
0M2	OP0	M1	LM1	–	–	EN1
0M3	OP0	M1/M2*	LM1/LM2*	–	–	EN1
1M1	OP1	MN/M2*	LM1/LM2*	N1	CE1	EN1
1M2	OP1	M1/M3*	LM2	N1	CE1/CE2*	EN1
2L1.5	OP2	MN/M3*	LM2	N1	CE1/CE2*	EN1
2L2.5	OP2	M2/M3*	LM1/LM3*	N1/N2*	CE2	EN1
2M1	OP2	MN/M2*	LM2	N1	CE1	EN1
2M2	OP2	M2/M3*	LM2/LM3*	N1/N2*	CE2	EN1
2M3	OP2	M3	LM2/LM3*	N1/N2*	CE2	EN1
2R1.5	OP2	M2/M3*	LM2	N1	CE1/CE2*	EN1
2R2.5	OP2	M3	LM2/LM3*	N1/N2*	CE2	EN1
3L1.5	OP3	M2/M5*	LM2/LM6*	N1/N5*	CE2	EN1
3L2.5	OP3	M3/M5*	LM3/LM6*	N1/N3*	CE2/CE3*	EN1
3M1	OP3	M1/M5*	LM2	N1/N5*	CE2	EN1
3M2	OP3	MN/M5*	LM2/LM3*	N2	CE1/CE3*	EN1
3M3	OP3	M3/M5*	LM3	N2/N3*	CE2/CE3*	EN1
3R1.5	OP3	MN/M5*	LM2	N1/N5*	CE2	EN1
3R2.5	OP3	M3/M5*	LM3/LM6*	N2/N3*	CE1/CE3*	EN3
4L1.5	OP4	M5	LM2/LM6*	N1/N5*	CE2	EN1
4L2.5	OP4	M3/M5*	LM3/LM5*	N3	CE1/CE3*	EN1
4M1	OP4	M2/M5*	LM6	N1/N5*	CE2	EN1
4M2	OP4	M5	LM2/LM5*	N1/N5*	CE1/CE3*	EN3
4M3	OP4	M3/M5*	LM3/LM5*	N3/N4*	CE3	EN3
4R1.5	OP4	M2/M5*	LM2/LM5*	N1/N5*	CE2	EN1
4R2.5	OP4	M3/M5*	LM3/LM5*	N3/N4*	CE1/CE3*	EN3
5M1	OP5	M5	LM5/LM6*	N1/N5*	CE1/CE3*	EN1
5M2	OP5	M3/M5*	LM3/LM5*	N3/N5*	CE2/CE3*	EN3
5M3	OP5	M3/M5*	LM3/LM5*	N3/N4*	CE3	EN3

VITA classical A1–D4 shades	OPAQUE	MARGIN	LUMINARY	NECK	CERVICAL	ENAMEL
A1	OP A1	M1/M3*	LM2	N1	CE1	EN1
A2	OP A2	MN/M3*	LM2	N1/N2*	CE1/CE2*	EN1
A3	OP A3	M3	LM3/LM6*	N1/N3*	CE2	EN1
A3,5	OP A3,5	M3/M5*	LM3/LM6*	N3	CE1/CE3*	EN2
A4	OP A4	MN/M5*	LM2/LM5*	N1/N5*	CE3	EN2
B1	OP B1	MN/M2*	LM1/LM2*	N1	CE1	EN2
B2	OP B2	M2/M3*	LM2	N1	CE1/CE2*	EN2
B3	OP B3	M3	LM3/LM6*	N1/N2*	CE2	EN2
B4	OP B4	M3	LM3/LM6*	N1/N3*	CE2/CE3*	EN2
C1	OP C1	MN/M2*	LM2	N1	CE1	EN2
C2	OP C2	M2/M5*	LM2/LM6*	N1/N5*	CE1	EN2
C3	OP C3	M2/M5*	LM6	N1/N5*	CE1/CE2*	EN1
C4	OP C4	M5	LM5/LM6*	N5	CE3	EN1
D2	OP D2	M2/M5*	LM2/LM6*	N1/N5*	CE1/CE2*	EN2
D3	OP D3	M3/M5*	LM6	N1/N5*	CE2	EN2
D4	OP D4	M2/M3*	LM3/LM6*	N1/N5*	CE2/CE3*	EN2

* Mixing ratio 1:1

<p>VITA VMK Master® WASH OPAQUE – suitable for masking substructures and achieving restorations with more intense or warmer shades</p>		W0	golden-orange
<p>VITA VMK Master® OPAQUE – for masking the substructure material</p>		OP0–OP5	VITA SYSTEM 3D-MASTER
		A1–D4	VITA classical
<p>VITA VMK Master® OPAQUE DENTINE – supports the shade effect if only minimal space is available – to be used in the gingival area to avoid loss in color of pontics</p>		OM1–5M3	VITA SYSTEM 3D-MASTER
		A1–D4	VITA classical
<p>VITA VMK Master® DENTINE – shade-bearing material to build up the ceramic restoration according to natural teeth</p>		OM1–5M3	VITA SYSTEM 3D-MASTER
		A1–D4	VITA classical
<p>VITA VMK Master® ENAMEL – incisal materials with matched shades to reproduce the shade effect of natural enamel</p>		EN1	whitish
		EN2	yellowish-neutral
		EN3	reddish
<p>VITA VMK Master® WINDOW – to increase the translucency and reduce the intensity of the shade; to be used in the unmixed or mixed state</p>		WIN	transparent
<p>VITA VMK Master® TRANSLUCENT – to reproduce various levels of transparency of the natural enamel and various translucent areas, eight translucent shade nuances are available for individualization and characterization – these materials can be used, for example, for marginal ridges, wedges or discolorations of enamel</p>		T1	whitish
		T2	yellowish-brownish
		T3	pink
		T4	neutral
		T5	light blue
		T6	blue
		T7	grey
		T8	reddish
<p>VITA VMK Master® OPAL TRANSLUCENT –translucent material with natural opalescence</p>		OT1	neutral
<p>VITA VMK Master® PEARL TRANSLUCENT – pearly shine on the surface – especially for the reproduction of young and bleached teeth – is mixed with WINDOW and applied to the surface to brighten the dentine body</p>		PLT1	pearly-cream

<p>VITA VMK Master® NECK</p> <ul style="list-style-type: none"> – perfect shade reproduction in the cervical area can be supported with the NECK materials – the use of NECK materials allows the ability to achieve higher intensity of the shade and opacity 		N1	beige
		N2	yellow
		N3	yellow-orange
		N4	orange
		N5	khaki
<p>VITA VMK Master® MARGIN</p> <ul style="list-style-type: none"> – to create an esthetic transition in the case of a labially shortened metal coping – can be intensified with VITA INTERNO materials – (please read the information in the section "Application of a ceramic shoulder") 		MN	neutral
		M1	white
		M2	beige
		M3	yellow
		M4	orange-reddish
		M5	light brown
<p>VITA VMK Master® LUMINARY</p> <ul style="list-style-type: none"> – highly fluorescent materials to support and control the natural fluorescence, in particular in cases of thin layers 		LM1	white
		LM2	sand
		LM3	yellow
		LM4	light brown-orange
		LM5	light brown
		LM6	light khaki
<p>VITA VMK Master® CERVICAL</p> <ul style="list-style-type: none"> – the materials can be placed on the dentine or incisally on the enamel above the neck, up to the approximal area to increase the effect of depth 		CE1	light yellow
		CE2	light orange
		CE3	golden yellow
<p>VITA VMK Master® DENTINE MODIFIER</p> <ul style="list-style-type: none"> – washed in the dentine to intensify the shade in the unmixed state or mixed with one another – for coloring the inside to obtain effects of depth – for preparing mamelons in the incisal area and creating age-specific abrasion characteristics 		DM1	white
		DM2	cream
		DM3	yellow
		DM4	orange
		DM5	reddish
		DM6	brownish-reddish
		DM7	khaki
		DM8	grey
<p>VITA VMK Master® GINGIVA</p> <ul style="list-style-type: none"> – for accurate color restoration of soft tissue loss and for its anatomical correction – can be used in the unmixed state or mixed with one another – materials are fired based on the parameters of the first and second dentine firing 		G1	dusky pink
		G2	orange-pink
		G3	pink-red
		G4	brown-red
		G5	dark red
		GOL	light
		GOD	dark
<p>VITA VMK Master® CORRECTIVE</p> <ul style="list-style-type: none"> – for corrections after glaze firing 		COR1	neutral
		COR2	beige



VITA VMK Master® STANDARD SET 3D-MASTER* Basic set		
Quantity	Content	Material
1	12g	WASH OPAQUE WO
5	12g	OPAQUE OP1–OP5
26	12g	OPAQUE DENTINE 1M1–5M3
26	12g	DENTINE 1M1–5M3
2	12g	ENAMEL EN1, EN3
1	12g	TRANSLUCENT T4
1	12g	WINDOW WIN
3	12g	CERVICAL CE1–CE3
5	12g	NECK N1–N5
2	12g	CORRECTIVE COR1–COR2
2	50ml	Modelling liquid
1	50ml	Opaque liquid
1	–	STANDARD shade guide
1	–	3D-MASTER shade indicator
1	–	VITA Linearguide 3D-MASTER
–	–	Accessories
1	–	Working Instructions

* also available as VITA VMK Master 10-COLOR SET with the following ten most common VITA SYSTEM 3D-MASTER shades:
1M2, 2L1.5, 2M1, 2M2, 2R2.5, 3L1.5, 3M1, 3M2, 3M3, 4M2

** each also available with PASTE OPAQUE



VITA VMK Master® STARTER SET 3D-MASTER* Two-color set (2M2, 3M2)		
Quantity	Content	Material
2	12g	OPAQUE OP2, OP3
2	12g	OPAQUE DENTINE 2M2, 3M2
2	12g	DENTINE 2M2, 3M2
1	12g	ENAMEL EN1
1	12g	TRANSLUCENT T4
1	50ml	Modelling liquid
1	50ml	Opaque liquid
2	–	Shade tabs 2M2, 3M2
1	–	Working Instructions

* also available with PASTE OPAQUE



VITA VMK Master® BLEACHED COLOR SET* Ultra-bright shades for the reproduction of bleached teeth		
Quantity	Content	Material
1	12g	OPAQUE OPO
3	12g	OPAQUE DENTINE 0M1–0M3
3	12g	DENTINE 0M1–0M3
1	12g	ENAMEL EN1
1	12g	TRANSLUCENT T4
1	50ml	Modelling liquid
1	50ml	Opaque liquid
1	–	BLEACHED SHADE GUIDE 0M1-0M3
1	–	Working Instructions

* also available with PASTE OPAQUE



VITA VMK Master® STANDARD SET classical* Basic set		
Quantity	Content	Material
1	12g	WASH OPAQUE WO
16	12g	OPAQUE A1–D4
16	12g	OPAQUE DENTINE A1–D4
16	12g	DENTINE A1–D4
2	12g	ENAMEL EN1, EN2
1	12g	TRANSLUCENT T4
1	12g	WINDOW WIN
3	12g	CERVICAL CE1–CE3
5	12g	NECK N1–N5
2	12g	CORRECTIVE COR1–COR2
2	50ml	Modelling liquid
1	50ml	Opaque liquid
1	–	STANDARD shade guide
1	–	VITA classical A1–D4 shade indicator
1	–	VITA classical A1-D4 shade guide
–	–	Accessories
1	–	Working Instructions

* also available with PASTE OPAQUE



VITA VMK Master® STARTER SET classical* Two-color set (A2, A3)		
Quantity	Content	Material
2	12g	OPAQUE A2, A3
2	12g	OPAQUE DENTINE A2, A3
2	12g	DENTINE A2, A3
1	12g	ENAMEL EN1
1	12g	TRANSLUCENT T4
1	50ml	Modelling liquid
1	50ml	Opaque liquid
2	–	Shade tabs A2, A3
1	–	Working Instructions

* also available with PASTE OPAQUE



VITA VMK Master® ADDITIONAL SET For incorporating natural effects and characteristics		
Quantity	Content	Material
8	12g	TRANSLUCENT T1–T8
8	12g	DENTINE MODIFIER DM1–DM8
6	12g	LUMINARY LM1–LM6
6	12g	MARGIN MN, M1–M5
1	12g	OPAL TRANSLUCENT OT1
1	12g	PEARL TRANSLUCENT PLT1
1	50ml	Modelling liquid
1	–	TRANSLUCENT shade guide
1	–	DENTINE MODIFIER/ LUMINARY shade guide
1	–	MARGIN/GINGIVA shade guide



VITA VMK Master® GINGIVA SET*		
Gingiva materials with natural effects		
Quantity	Content	Material
1	12g	GINGIVA G1–G5
5	12g	GOL, GOD
26	–	MARGIN/GINGIVA shade guide

* also available with PASTE OPAQUE

The following quantities are available individually:				
Materials	5g	12g	50g	250g
WASH OPAQUE	7g	x	x	–
OPAQUE	x	x	x	–
OPAQUE DENTINE, DENTINE ENAMEL, TRANSLUCENT T4, WINDOW	–	x	x	x*
TRANSLUCENT, LUMINARY, PEARL TRANSLUCENT, NECK, OPAL TRANSLUCENT, MARGIN, CERVICAL, DENTINE MODIFIER, GINGIVA, CORRECTIVE	–	x	–	–
GINGIVA OPAQUE	x	x	–	–

*not available in all shades



VITA MODELLING FLUID

For mixing all dentine, incisal and additional materials.
VITA MODELLING FLUID avoids rapid drying of the ceramic material.
Increased plasticity during layering is achieved.



VITA MODELLING FLUID RS

Red special liquid for mixing all dentine, incisal and additional materials.
The smooth consistency of VITA MODELLING FLUID RS allows extended and wet processing, while ensuring good stability. The fluid is particularly suited for large-sized restorations and multi-unit bridges.



VITA OPAQUE FLUID

For mixing all powder opaque materials.

⚠ **Note:** Cannot be used for mixing the dentine materials!



VITA PASTE OPAQUE LIQUID

Liquid for diluting the consistency of the paste and, if required, for remixing the paste opaque materials.



VITA HIGH SILVER MODELLING LIQUID

Anti-greening liquid for high silver content alloys (silver content >30%).
NOT included in the assortment!



VITA AKZENT® PLUS

For reproducing natural shade effects and anomalies during surface characterization. The stains feature a fine-grain structure, intense shade and are slightly fluorescent and particularly stable and can be mixed with one another.

VITA AKZENT® PLUS FLUID

For mixing VITA AKZENT PLUS stains, VITA AKZENT PLUS GLAZE, VITA AKZENT PLUS GLAZE LT and VITA AKZENT PLUS FINISHING AGENT.

VITA AKZENT® PLUS FINISHING AGENT

Finishing agent with very fine consistency for natural surface luster. The finishing agent produces a transparent coat and a translucent shade. It has a considerably lower masking capacity than a glaze material.



VITA INTERNO®

Materials for perfect reproduction of very subtle, in-depth shade effects. They feature intense shades and high fluorescence to achieve exceptional brilliance of the shades. VITA INTERNO materials can be washed in (in the unmixed state) or mixed with OPAQUE DENTINE, DENTINE, ENAMEL and TRANSLUCENT.

VITA INTERNO FLUID

For mixing the VITA INTERNO materials.

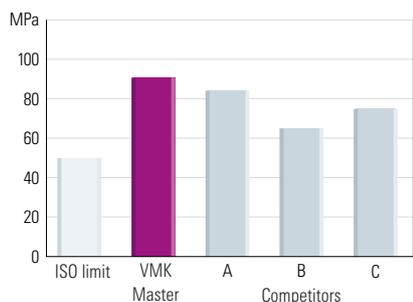


Fig.: 3-point flexural strength according to ISO 6872

Physical properties

In addition to very good bonding to metal and ideal thermal stability, VITA VMK MASTER features extremely low solubility in acids. Compared to materials of competitors and the ISO limit according to ISO 6872, VITA VMK Master exhibits very good flexural strength values.

VITA VMK Master® – Physical properties

Property	Unit of measure	Value
Coefficient of thermal expansion - CTE (25 - 500°C) dentine	$10^{-6} \cdot K^{-1}$	13.2 – 13.7
Solubility in acids	$\mu g/cm^2$	~ 05
3-point flexural strength	MPa	~ 90

VITA VMK Master® – Chemical composition

Components	Wt%
SiO ₂	30 – 70
Al ₂ O ₃	7 – 17
K ₂ O	5 – 13
Na ₂ O	5 – 8
CaO	1 – 3
CeO ₂	≤ 21
ZrO ₂	≤ 20
TiO ₂	≤ 14
Fe ₂ O ₃	≤ 5
BaO	≤ 4
B ₂ O ₃	≤ 2
SnO ₂	≤ 2
MgO	< 1
Sb ₂ O ₃	< 0,5
ZnO	< 0,5

Components	Wt%	
	Pastes	Powders
Ceramic Powder	60 – 70	100
Butanediol	20 – 27	–
Glycerol	6 – 9	–
Additional components	3 – 4	–

Indication

- VITA VMK Master is a feldspar veneering ceramic for metal substructures in the usual CTE range of $13,8 - 15,2 \cdot 10^{-6} \cdot K^{-1}$.

Contraindication

- Substructures not within the recommended CTE range
- Parafunction (bruxism)
- If minimum layer thickness of the ceramics cannot be adhered to
- In cases of inadequate oral hygiene

Intended purpose:

- VITA VMK Master products are ceramic materials for dental treatments.

Patient target group:

- No restrictions.

Intended user:

- Dental professionals only: dentist and dental technician (Rx only).

Information about risks:

- Information on reporting serious incidents in connection with medical devices, general risks associated with dental treatments, residual risks and (if applicable) short clinical safety and performance reports (SSCPs) can be found at www.vita-zahnfabrik.com/product_safety.

Storage/disposal:

- Disposal via household waste. The products labelled with a pictogram for hazardous substances are to be disposed of as hazardous waste. Recyclable waste (such as attachments, paper and plastics) must be disposed of using appropriate recycling systems. If necessary, contaminated product residues should be pretreated in accordance with regional regulations and disposed of separately.

Explanation of symbols:

Manufacturer VITA Zahnfabrik		Manufacturing date	
Medical device		Shelf life	
For professionals only	Rx only	Product number	
Refer to instructions for use		LOT number (batch)	

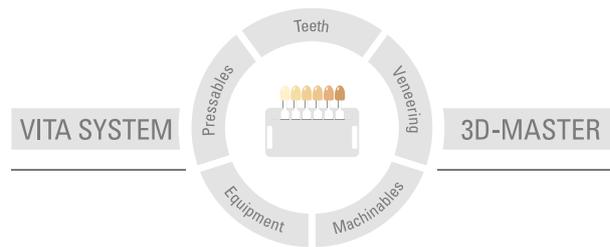
The following products require hazard identification:		
<p>VITA OPAQUE FLUID</p>	<p>Causes severe skin burns and eye damage. May be corrosive to metals.</p> <p>Causes severe eye irritation.</p> <p>When working with the product, do not eat or drink. In case of contact with eyes: rinse carefully with water for some minutes. In case of contact with skin: rinse thoroughly with water. Do not empty into drains. This product and its container must be disposed of as hazardous waste.</p>	 
<p>VITA SPRAY-ON LIQUID VITA SPRAY-ON INDICATOR LIQUID</p>	<p>Highly flammable liquid and vapor.</p> <p>Keep container tightly closed. Keep away from ignition sources. - No smoking. Use only in well-ventilated areas. Store container tightly closed at an adequately ventilated place. Do not empty into drains. This product and its container must be disposed of as hazardous waste.</p>	

Please refer to the safety data sheet for detailed information!
Information on this subject can be found under FAQs - metal ceramics - on our website.

<p>Protective clothing</p>	<p>When working with the product, wear suitable safety goggles/face protection, gloves and safety clothing. In case of formation of dust, use an extraction system or wear a face mask.</p>	
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VITA VMK Master veneering ceramic is available in VITA SYSTEM 3D-MASTER and VITA classical A1–D4 shades. Shade compatibility with all VITA SYSTEM 3D-MASTER and VITA classical A1–D4 materials is ensured.

With the unique VITA SYSTEM 3D-MASTER, all natural tooth shades can be systematically determined and perfectly reproduced.



Please note: Our products must be used in accordance with the instructions for use. We accept no liability for any damage resulting from incorrect handling or usage. The user is furthermore obliged to check the product before use with regard to its suitability for the intended area of applications. We cannot accept any liability if the product is used in conjunction with materials and equipment from other manufacturers that are not compatible or not authorized for use with our product and this results in damage. The VITA Modulbox is not necessarily a component of the product. Date of issue of this information: 2023-08

After the publication of this information for use any previous versions become obsolete. The current version can be found at www.vita-zahnfabrik.com

VITA Zahnfabrik has been certified and the following products bear the mark

CE 0124:

VITA VMK Master® · VITA AKZENT® PLUS · VITA INTERNO®

  Rx Only (for professional use only)

  VITA Zahnfabrik H. Rauter GmbH & Co.KG, Bad Säckingen (Germany)
Zweigniederlassung Basel c/o Perrig AG, Max Kämpf-Platz 1, 4058 Basel

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