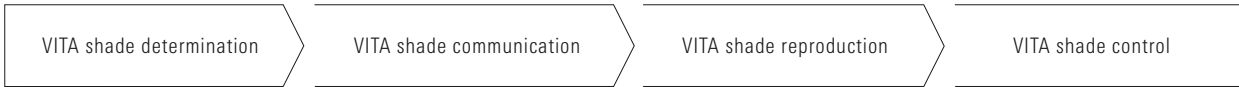


# Questions and Answers on VITAVM®9



VITA – perfect match. **VITA**

Available in VITA SYSTEM 3D-Master  
and VITA classical A1–D4 shades



Information and details on the following points can be found on the indicated pages. Please check the pages listed for more detailed information.

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### 1. Bonding issues with all-ceramic substructures / Veneering ceramic

- The Base Dentine washbake must be applied according to the instructions for use, so that good surface wetting is achieved.  
Maintaining the right temperature is essential to ensure that the Base Dentine melts correctly. Do not pre-dry freshly layered ceramics too quickly or at too high a temperature.
- When adjusting a bridge, ensure that the interdental spaces are not filled with dry grooves, otherwise the material will not bond.  
If necessary, wet the interdental spaces with an oily liquid (e.g., VITA INTERNO Fluid, DO NOT use baby oil) before filling.

### 2. Retraction of the ceramic in the marginal area

- Create a smaller tooth shape to support the construction in order to achieve uniform ceramic wall thickness and support of the cusps in the posterior region. Interdental spaces should be designed in a U-shape.
- Ensure that the materials are applied well in the marginal area. As a precaution before firing, use a clean, dry brush (brush no. 10) to go over these areas (from incisal to cervical).
- When firing bridges for the first time, always separate through to the base material. Ceramic always contracts at the thickest point, which is why a uniform layer thickness is recommended. Do not use dry, saw-toothed instruments. This can cause the ceramic to detach from the surface of the substructure and peel off.
- If a rubber polisher is used before the finish, the surface cannot be wetted with liquid afterwards. It first needs to be cleaned.  
Cleaning with a steam jet or water is not enough here. Any silicone residue on the surface needs to be removed mechanically using a goat hair brush.
- No residue from insulating agents may be left on the ceramic surface. Do not use baby oil or similar products for insulation. Contact with the freshly insulated antagonist (opposing bite) can also lead to problems.



### 3. Ceramic spalling (chipping)

- From the outset, the minimum wall thicknesses should be observed when designing the substructure, ensuring that the minimum wall thicknesses of 0.5 mm along the circumference and 0.7 mm along the occlusal surface are observed. Only carry out minor corrections before sintering the substructure. Please observe the connector thicknesses from the manufacturer.
- However, if any minor corrections need to be made to the substructures after sintering, only work with diamonds and a water-cooled turbine. Never sandblast exterior surfaces. Do not apply too much pressure and work with the specified number of rotations (observe the manufacturer's instructions).
- Avoid a build-up of heat on the surface. Do not use finishing stones, as this can cause binding agents to adhere to the surface. After grinding, carry out a thermal treatment (regeneration firing) of the substructure to reverse any phase transformations that may have occurred on the surface. Any microcracks which appear cannot be regenerated.
- Create a smaller tooth shape to support the construction to achieve uniform ceramic wall thickness and support of the cusps in the posterior region. Interdental spaces should be designed in a U-shape. No sharp edges.
- Never blast the surface that is to be veneered on the substructure, as this will result in differences in the CTE. Ensure that the blasting sand is clean when blasting the inner surfaces. Do not use circulating sandblasters.
- To ensure optimum wetting of the surface for the ZrO<sub>2</sub> substructure, we recommend a Base Dentine washbake (alternatives that can be used: Transpa Dentine, Chroma Plus, Effect Liner, etc.). This must be applied according to the instructions for use. Maintaining the right temperature (+40°C compared to normal firing temperature) is essential to ensure that the material melts correctly. The surface should shine.
- A uniform layer thickness of the ceramic veneer across the entire surface to be veneered must be ensured.
- Ensure that the firing parameters and firing temperature are correct. For long-span bridges and thick pontics, selecting a longer heating rate is recommended due to the low thermal conductivity of the zirconia substructure, e.g., 45°C per minute. Use a mirror to check the firing muffle and test whether all the heating coils are firing (optimum test temperature between 200° and 300°C).
- Grind the surface of the veneering ceramic with diamonds. In doing so, take care not to grind too hot. In the case of blunt diamonds, do not increase the contact pressure; replace the grinding wheel instead. Always provide water cooling when using a turbine.
- If corrections to the grinding are required during placement of the restorations, they need to be smoothed again. The best way to do this is to refire or polish the sanded surfaces.
- The thickness of the ceramic layer should not exceed the total layer thickness of 2 mm.
- In order to avoid any residual thermal tension in the veneering ceramic, and with massive restorations in particular, we recommend slow cooling during the final firing process at below the transformation temperature of the veneering ceramic (for VITA VM 9, this is approx. 600°C). This can include the glaze firing, as well as a final dentin firing (if only polishing is required).

	Pre-dry. °C	min. →	min. ↗	°C/min.	Temp. °C	min. →	°C ↘	min. →
Dentine firing	500	6.00	7.27	55	910	1.00	600	0.00

Lift position when cooling 75%, so that the end of the firing base is still in the combustion chamber



### 4. Tearing in the ceramic

- Create a smaller tooth shape to support the construction in order to achieve a uniform ceramic wall thickness. Support of the palatal cusp in the posterior region. U-shaped model preparation of the interdental spaces.
- Ensure that there are no bubbles when mixing all of the ceramic materials. For this purpose, add the liquid to the powder from the side and mix the mixture well with a glass or agate spatula. Do not use a metal spatula, as this may cause metal abrasion and lead to discoloration of the ceramic.
- Ensure that the workstation is clean. Dust and contaminated brush water can lead to problems (e.g., blistering).
- Avoid applying any insulating liquids that are too thick.
- When firing bridges for the first time, always separate through to the substructure. Ceramic always contracts at the thickest point, which is why a uniform layer thickness is recommended. Do not use dry, saw-toothed instruments. This can cause the ceramic to detach from the surface and peel off.
- Ensure that the firing parameters and firing temperature are correct. Perform a test of the firing muffle by using a mirror to look into the firing chamber and checking that the firing muffle is burning evenly all around.
- If a rubber polisher is used before the final finish, the surface cannot be wetted with liquid afterwards. It first needs to be cleaned. Cleaning with a steam jet or water is not enough in this instance. Any silicone residue on the surface needs to be removed mechanically using a goat hair brush.
- No residue from insulating agents may be left on the ceramic surface. Do not use baby oil or similar products for insulation. Contact with the freshly insulated antagonist (opposing bite) can also lead to problems.
- When adjusting a bridge, ensure that the interdental spaces are not filled with dry grooves, otherwise the material will not bond. If necessary, wet the interdental spaces with an oily liquid (e.g., VITA INTERNO, DO NOT use baby oil) before filling.



### 5. Fissures

- Create a smaller tooth shape to support the construction in order to achieve a uniform ceramic wall thickness and support of the cusps in the posterior region. Interdental spaces should be designed in a U-shape. No sharp edges.
- Avoid a build-up of heat on the surface.
- The Base Dentine washbake (alternatives that can be used: Transpa Dentine, Chroma Plus or Effect Liner) are to be applied according to the instructions for use in order to achieve good surface wetting. Maintaining the right temperature (+40°C compared to normal firing temperature) is essential to ensure that the material melts correctly.
- When firing bridges for the first time, always separate through to the substructure. Ceramic always contracts at the thickest point, which is why a uniform layer thickness is recommended. Do not use dry, saw-toothed instruments. This can cause the ceramic to detach from the surface of the substructure and peel off.
- Ensure that the firing parameters and firing temperature are correct. Perform a test of the firing muffle by using a mirror to look into the firing chamber and checking that the firing muffle is burning evenly all around.
- Grind the surface of the ceramic with diamonds. In doing so, take care not to grind hot. In the case of blunt diamonds, do not increase the contact pressure on the ceramic; replace the grinding wheel instead. Always provide water cooling when using a turbine.
- Do not use a firing tray with metal pins.

### 6. Formation of bubbles

- Only machine the substructure with diamonds and a water-cooled turbine. Do not apply too much pressure and work with the specified number of rotations (observe the manufacturer's instructions). Avoid heat build-up on the surface during the finishing process. Do not use finishing stones.
- Ensure that there are no bubbles when mixing all of the ceramic materials. For this purpose, add the liquid to the powder from the side and mix the mixture well with a glass or agate spatula. The use of a metal spatula can lead to metal abrasion and discoloration of the ceramic. For this reason it should not be used. Keep the workstation clean, as (metal) dust and contaminated brush water can lead to issues. Avoid applying any insulating liquids that are too thick.
- Ceramic materials should not be mixed with modeling liquid but with distilled water when remixing. Again, make sure that no bubbles are incorporated here. Ensure that the layered mixture has a uniform moisture ratio. Do not constantly re-wet or allow to dry out.
- Blasting the first firing with  $AL_2O_3$  may cause bubbles.



### 7. Shade of the restoration appears too pale/too gray

- Ensure that there are no bubbles when mixing all of the ceramic materials. For this purpose, add the liquid to the powder from the side and mix the mixture well with a glass or agate spatula.  
The use of a metal spatula can lead to metal abrasion and discoloration of the ceramic. Do not use it for this reason. Keep the workstation clean, as metal dust and contaminated brush water can lead to problems. Avoid applying any insulating liquids that are too thick.
- No residue from insulating agents may be left on the ceramic surface. Do not use baby oil or similar products for insulation. Contact with the freshly insulated antagonist (opposing bite) can also lead to problems.
- Firing temperature too high or too low: make sure that the firing parameters and firing temperature are correct (take a firing sample using a firing degree test).
- Too much TRANSPA DENTINE and/or ENAMEL used.
- Too little BASE DENTINE used.
- Veneer thickness too thin; to ensure reliable shade reproduction, a ceramic layer thickness of  $\geq 0.6$  mm is required.
- Ceramic materials should not be mixed with modeling liquid but with distilled water when remixing. Again, make sure that no bubbles are incorporated here. Ensure that the layered mixture has a uniform moisture ratio. Do not constantly re-wet or allow to dry out. Only use the grinder for processing one material.
- Pre-drying time was too short; liquid was not completely burnt out.

### 8. Cloudiness in the ceramic

- Ensure that the firing parameters and firing temperature are correct. Use a mirror to check the firing muffle and test whether all the heating coils are firing (optimum test temperature between 200° and 300°C).
- No residue from insulating agents may be left on the ceramic surface. Do not use baby oil or similar products. Contact with the freshly insulated antagonist (opposing bite) can also lead to problems.
- The correction should not be applied in portions that are too small. It is also important to avoid any overdrying. If necessary, use a liquid that keeps the restoration wet for longer (VITA MODELLING FLUID or adding a drop of VITA Interno Fluid).
- Firing temperature is too low.  
Tip: Perform a WINDOW test
- Avoid suctioning and re-wetting the material too frequently; ensure a uniform moisture level.
- Pre-drying time was too short; liquid was not completely burnt out.



### 9. Pinholes on the ceramic surface

- Ensure that there are no bubbles when mixing all of the ceramic materials. For this purpose, add the liquid to the powder from the side and mix the mixture well with a glass or agate spatula.  
Use of a metal spatula can lead to metal abrasion and discoloration of the ceramic. Do not use it for this reason. Keep the workstation clean, as metal dust and contaminated brush water can lead to problems. Avoid applying any insulating liquids that are too thick.
- Ceramic materials should not be mixed with modeling liquid, but with distilled water when remixing. Again, make sure that no bubbles are incorporated here. Ensure that the layered mixture has a uniform moisture ratio. Do not constantly re-wet or allow to dry out.
- The correction should not be applied in portions that are too small. It is also important to avoid any overdrying, possibly using a liquid that keeps it wet for longer.
- Avoid suctioning and re-wetting the material too frequently; ensure a uniform moisture level.
- Wet sanded surfaces before applying the ceramic (but do not use oily liquids such as Interno Liquid).

### 10. Black spots in the ceramic

- Ensure that there are no bubbles when mixing all of the ceramic materials. For this purpose, add the liquid to the powder from the side and mix the mixture well with a glass or agate spatula.  
The use of a metal spatula can lead to metal abrasion and discoloration of the ceramic. Do not use it for this reason.
- Keep the workstation clean, as (metal) dust and contaminated brush water can lead to problems.
- Avoid applying any insulating liquids that are too thick. Do not use baby oil or similar products.





### 11. Error during firing

- Ensure a good application of the materials at the marginal areas. If necessary, brush over these areas with a clean, dry brush before firing.
- Prior to the first dentine firing, the individual units of bridges must be separated in the interproximal areas down to the substructure. Ceramic always contracts at the thickest point, which is why a uniform layer thickness is recommended. Do not use dry, saw-toothed instruments. This can cause the ceramic to detach from the surface of the substructure and peel off.
- If the crown appears "lifeless" or not translucent enough, the wrong liquid may have been used.
- If the crown looks very "glassy" after firing, or if the edges become round, please check the firing muffle!!
- Incorrect oven parameters or a defective vacuum pump can cause an error.
- An incorrect pre-drying process, cloudiness, gray shade can cause an error.



### 12. Questions and answers

- *Which substructure materials can be veneered with VITA VM 9?*

VITA VM 9 is recommended for substructures made of partially yttria-stabilized  $ZrO_2$  with a CTE of approx.  $10,5 \cdot 10^{-6} \cdot K^{-1}$  (e.g. VITA YZ), irrespective of the manufacturer, provided that the instructions for use and the guidelines for the substructure design recommended by VITA are observed. Since the function depends on a variety of parameters, only the user can ensure the quality in the individual case.

In addition, VITA VM 9 is also ideal for the individualization of all VITABLOCS.

- *What is the purpose/area of application of the VITA VM 9 EFFECT LINER?*

The VITA VM 9 EFFECT LINER should not be confused with the LINER materials from the competition. The VITA VM 9 EFFECT LINER is not used to shade the zirconia substructure.

The EFFECT LINER has been proven to exhibit an especially strong fluorescence and is used universally to control fluorescence from a depth.

- *What do you recommend for shading the zirconia substructure material?*

The VITA YZ T White variant is shaded with VITA YZ T COLORING LIQUID prior to sintering using the immersion technique. The VITA YZ HT, ST, XT White variants are colored before sintering using the brush technique. Please use the respective VITA YZ HT, VITA YZ ST or VITA YZ XT SHADE LIQUIDS product matched to the translucency level. VITA YZ Color and MultiColor variants are already pre-colored and can be sintered immediately. For **uncolored** VITA YZ substructures, we recommend the use of VITA VM 9 EFFECT BONDER for reliable shade reproduction.

EFFECT BONDER mixed with VITA VM 9 EFFECT BONDER FLUID is applied in a very thin layer (similar to WASH applications for metal ceramics).

- *Can the zirconia substructure be completely sandblasted before I veneer with VITA VM 9?*

No, mechanical surface treatments such as grinding with diamond tools and sandblasting may supply hypercritical quantities of energy to the zirconia substructure, which may result in deformation of large areas of the crystal lattice or even in the phase transition of  $ZrO_2$ . As a consequence, complex stress can be formed at the interface of the veneer, which may result in immediate failure or in subcritical crack growth and consequential late damage to the restoration. This effect can be detected, for example, by radiographic phase analysis (Fig.1). Compared with tetragonal  $ZrO_2$ , monoclinic  $ZrO_2$  features a significantly lower CTE.

If the zirconia restoration is to be cemented using a phosphate-monomer-containing composite cement (e.g., PANAVIA), sandblasting of the adhesion surfaces with  $AL_2O_3$ , max. 50  $\mu m$ , at a pressure of  $\leq 2.5$  bar will create a permanent bond between the composite and the oxide ceramic.

- *What is the purpose of the BASE DENTINE washbake?*

BASE DENTINE washbake is used to achieve a good bond between the substructure material and the veneering material. Alternatively, Transpa Dentine, Chroma Plus or Effect Liner can also be used. What is important is that the correct firing temperature is maintained. The materials should be fired at 40°C higher than the normally specified temperature.



- *Are there special shoulder materials for VITA VM 9 and are they used in the same way as metal-ceramic veneering materials such as VITA VM 13?*

VITA VM 9 MARGIN materials are available; however, these are only used for minor corrections in the marginal area. A reduction of the  $ZrO_2$  cap in a similar way to the metal ceramic is not indicated.

- *How can I modify the intensity of the VITA YZ T COLORING LIQUID in bridge pontics?*

The intensity of the VITA YZ T COLORING LIQUID can be adjusted by applying it with a brush.

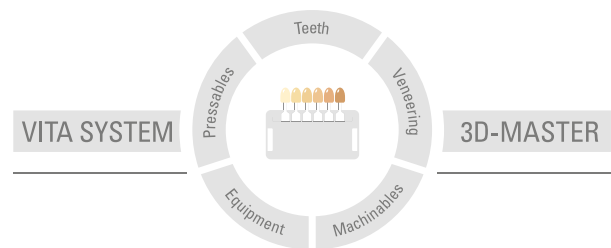
Brushing the substructure with distilled water and then immersing it in VITA YZ T COLORING LIQUID reduces the color absorption of the substructure.

- *The shade matches the shade guide very well, but deviates considerably when placed in the mouth (appears too dark).*

Possible cause may be a discolored stump.  
For this reason, please check the stump color and cover or bleach if necessary.

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

VITA VM veneering ceramics are available in VITA SYSTEM 3D-MASTER shades. Shade compatibility with all VITA 3D-MASTER materials is ensured.



**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: 2024-06

After the publication of this information for use any previous versions become obsolete. The current version can be found at [www.vita-zahnfabrik.com](http://www.vita-zahnfabrik.com)

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

**CE 0124:**

VITA VM<sup>9</sup> · VITABLOCS<sup>®</sup> · VITA YZ<sup>®</sup> · VITA YZ<sup>®</sup> T, VITA YZ<sup>®</sup> HT · VITA YZ<sup>®</sup> ST · VITA YZ<sup>®</sup> XT · VITA YZ<sup>®</sup> T COLORING LIQUID · VITA AKZENT<sup>®</sup> Plus · VITA INTERNO<sup>®</sup>

Zirkonzahn Srl. Gais has been certified in accordance with the Medical Device Directive and the following products bear the CE mark

**CE 0051:**

VITA YZ<sup>®</sup> HT SHADE LIQUID

VITA YZ<sup>®</sup> ST SHADE LIQUID

VITA YZ<sup>®</sup> XT SHADE LIQUID

VITA YZ<sup>®</sup> EFFECT LIQUID

**MD** Rx Only

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