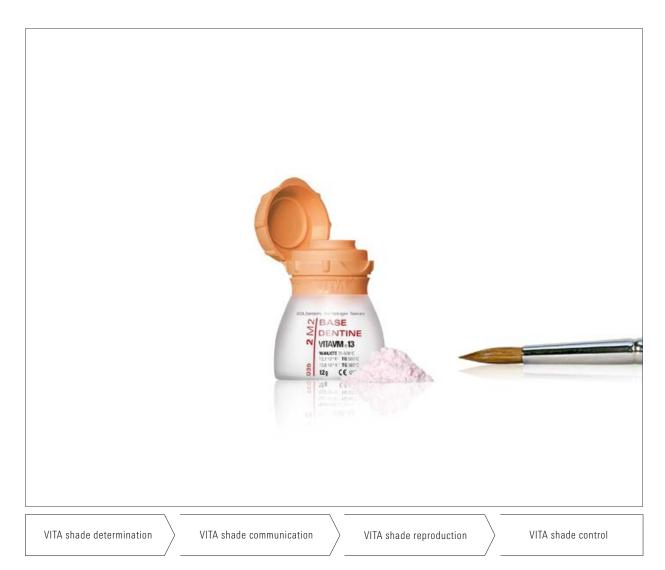
VITAVM_®13

Instructions for use/Full version



VITA – perfect match.



For veneering metal substructures in the conventional CTE range.

Available in VITA SYSTEM 3D-MASTER® and VITA classical A1–D4® shades.

VITAVM_®13

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Restoring oral harmony.

The result is the work of dentist Dr. Enrico Poli (Padua/Italy) and dental technician Maurizio Buzzo (Venice/Italy).

Photo courtesy of: M. Buzzo



Situation after preparation of teeth 11 and 21.



Metal crown copings; cervical reduction for shoulder.



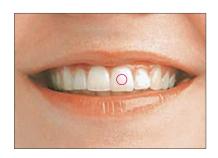
Crown copings prepared with opaque and shoulder material.



Restoration in harmony with the patient's natural dentition.

Expertise for more than 90 years

Shade management is more than just shade determination. At VITA, shade management means incorporating better solutions into a complete process. A key question we always ask at VITA is: How can we improve shade determination and reproduction? We do this through standardized process steps to increase the efficiency. Today dental specialists are expected to achieve better results, while spending less time and money. This goal is what brings us together.



VITA shade determination

The accurate determination of the basic shade of a tooth is the key prerequisite for patient acceptance. The basic shade is generally found in the dentine center.



Determining the effects

Natural teeth are uniquely formed for each individual. After determining the base shade, the details of a tooth - such as translucent zones or anomalies - need to be recorded to obtain an ideal match. We recommend the use of a digital photo to analyze details or effects.



VITA shade communication

To ensure accurate reproduction of the determined shade, it is essential to ensure that all parameters are communicated accurately to the dental laboratory. Any misunderstanding can lead to expensive and unnecessary extra work. For this reason, we recommend using the color communication form to describe the basic shade and a digital photo for the analysis of effects or details. With this information, the restoration can be created quickly and reliably, and integrates perfectly into the remaining dentition.



VITA shade reproduction

The most important step in tooth reproduction is to ensure that the determined tooth shade is accurately reproduced. Then the shade effects of the tooth can be reproduced to obtain a high-quality restoration.

No matter which VITA materials you choose, you can be certain that you'll be able to achieve this objective without time-consuming mixing or testing.

VITA shade control

In the final step, qualitative shade evaluation is no longer left to the subjective opinion of an individual. With the VITA process, objective control of the final restoration is very important for ensuring satisfied patients and avoiding additional work.

VITA VM 13 was designed as a feldspar veneering ceramic for metal substructures made of conventional alloys in the CTE range of 13.8-15.2. The CTE range and the firing temperature of VITA VM 13 are optimally matched to high gold content, reduced gold content and palladium based or precious metal-free alloys. With these firing temperatures, distortion of the alloy can be virtually ruled out.

VITA VM 13 ceramic features considerably more homogeneous distribution of the crystalline and glass phase after firing than traditional ceramics. This type of structure is described as a "fine structure." In Figs. 1 and 2, the fine structure of VITA VM 13 is compared with that of a traditional structure.

Fig. 1

The etched surface (etched for 20 seconds with VITA CERAMICS ETCH) of a conventional metal ceramic shows agglomerations of leucite crystals of up to 30 μm in diameter. The differences between the CTE values of the leucite agglomerations and those of the glass phase can lead to stress cracks.

Fig. 2

The etched surface of VITA VM 13 (etched for 20 seconds with VITA CERAMICS ETCH) shows an extremely fine distribution of the leucite crystals in the glass matrix.

Due to localized balancing of the differing CTE values of the leucite and the glass phase, it is possible to avoid larger stress cracks.

Good surface structure

In addition to improved physical properties, the fine structure of VITA VM 13 offers the dental technician and the patient a number of advantages. Since VITA VM 13 demonstrates excellent grinding and polishing characteristics after firing, it is possible to achieve very smooth surfaces. The adhesion to the ceramic surface is reduced, giving the patient a sense of cleanliness.

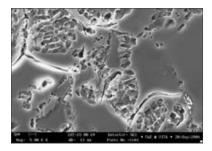


Fig. 1: SEM image of the surface of a conventional metal ceramic (magnification 5000 x).

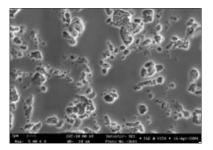
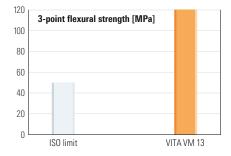


Fig. 2: SEM image of the surface of VITA VM 13 (magnification 5000 x).

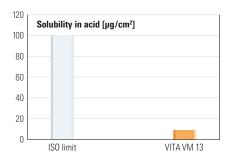
Improved physical properties

In addition to the lower firing temperature, VITA VM 13 demonstrates an improvement in flexural strength, its adhesive bonding and thermal shock resistance, while retaining the same low degree of solubility in acid.



Flexural Strength

Flexural strength of VITA VM 13 compared with the ISO limit according to ISO 6872.



Solubility

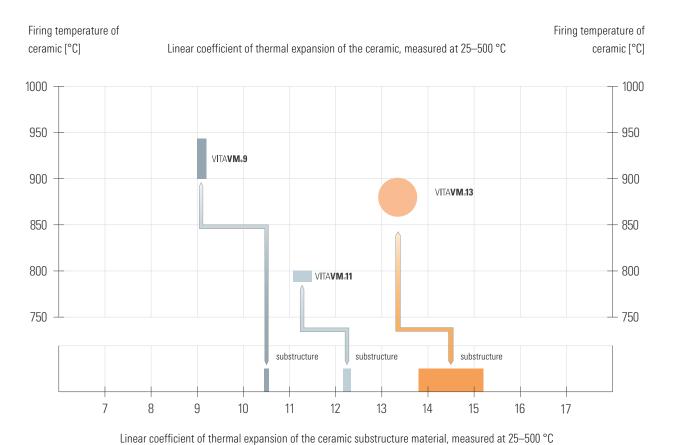
Solubility in acid of VITA VM 13 compared with the ISO limit according to ISO 6872.

Enamel-like properties

Like all VITA fine-structure ceramics, VITA VM 13 demonstrates behavior very similar to that of natural tooth enamel. This is confirmed by studies carried out with VITA VM 7 by the Dental Clinic of the University of Zurich in Switzerland and Dr. Giordano from the Goldman School of Medicine of the University of Boston.

Literature: E. A. McLaren, R. A. Giordano II, R. Pober, B. Abozenada "Zweiphasige Vollglas Verblendkeramik", (Quintessenz Zahntech 30, 1, 32-45 [2004])

For veneering alloys in the CTE range of $13.8-15.2 \cdot 10^{-6} \cdot \text{K}^{-1}$



VITA VM 9
CTE (25–500 °C) 9.0–9.2 · 10-6 · K-1

VITA VM 11
CTE (25–500 °C) 11.2–11.6 · 10-6 · K-1

VITA VM 13
CTE (25–500 °C) 13.1–13.6 · 10-6 · K-1

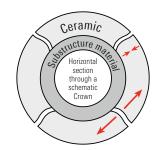
VITA VM 13
CTE (25–500 °C) 13.1–13.6 · 10-6 · K-1

VITA VM 13
CTE (25–600 °C) 13.8–15.2 · 10-6 · K-1

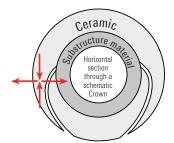
VITA VM 13
CTE (25–600 °C) 13.8–15.2 · 10-6 · K-1

(alloys measured at 25-600 °C)

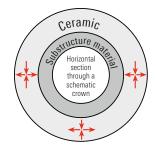
 $[\]ensuremath{^{*}}\xspace$ visit the download section of our website for more information about alloys



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.



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.



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.

It is optimal for the veneering ceramic to have a slightly 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. This creates stress differences (radial tensile stress) within the veneer, which grow with increasing layer thickness.

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 tray and the size of the workpiece during the firing cycles are important for the firing result.

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. 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 VM are based on the use of dark-colored ceramic firing trays. When using light-colored firing trays, the temperature may vary by 10–20 °C, and in some cases by up to 40 °C, from the reference value given, depending on the type of furnace that is used and needs to be adjusted correspondingly.



A slight luster of the ceramic surface is an evidence for correct firing. However, If the ceramic appears to be milky and non-homogeneous, the firing temperature is too low. Approach the correct firing temperature in steps of 5-10 °C.

Substructure design

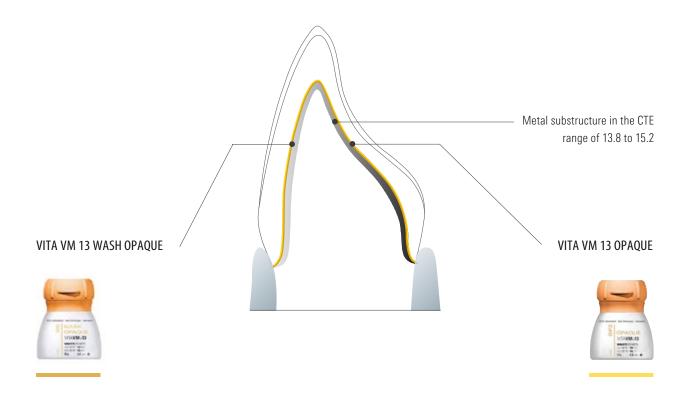
Crowns and bridge units, which are to be veneered with ceramic, must be modeled in reduced anatomical size. A minimum wall thickness of 0.4 mm is required in order to ensure a minimum wall thickness of 0.3 mm after finishing. Avoid sharp edges, undercuts and deep grooves. The stability can be further increased by means of metal collars or inlay-type supports in the palatal area.

Regarding the substructure, investing, casting, etching, finishing, sandblasting and oxidation, please follow the alloy manufacturer's instructions.

⚠ **Note:** Our practical experience in the CTE range of $13.8-15.2 \cdot 10^{-6} \cdot K^{-1}$ has shown that good results can be achieved when the CTE of the alloy (measured at 25-600 °C) is within the range of $14.0-14.4 \cdot 10^{-6} \cdot K^{-1}$. In the case of alloys with a CTE (25-600 °C) >14.5 · $10^{-6} \cdot K^{-1}$, slow cooling should be used from the first dentine firing forward. If the alloy has a higher CTE value, cooling in the 900 °C -700 °C range should not be completed in less than three minutes. For further information, see the list of alloys tested in combination with VITA VM 13. This list can be found at www.vita-zahnfabrik.com under Download/Veneering Materials/Alloy List.

Layer thicknesses for ceramics

When preparing a ceramic veneer, a uniform layer thickness across the entire surface to be veneered must be ensured. However, the entire thickness of the ceramic layer should not exceed 2 mm (the optimum layer thickness ranges from 0.7 to 1.2 mm).



To prepare the VITA VM 13 BASIC and BUILD UP layering, first apply WASH OPAQUE and OPAQUE to the substructure.

WASH OPAQUE fulfills the following functions:

- 1. Formation of the required adhesive oxides
- 2. Formation of a bond to the alloy surface
- 3. Enhancing the chroma of the restoration, particularly in the case of precious metal-free alloys

Wash opaque (WO) and the respective opaque material (OP) or SUN OPAQUE (SO) materials are available for the washbake. WO, OP and SO have the same chemical-physical properties and are perfectly suitable for the washbake.

For opaque firing, one opaque material is required for reproducing the VITA SYSTEM 3D-MASTER shades (one for each lightness level OPO-OP5) and the VITA classical A1–D4 shades (one for each shade).

⚠ **Note:** To produce a more intense and warmer shade, the respective OPAQUE can be mixed with Wash Opaque (WO golden-orange) or SUN OPAQUE (SO1 yellowish, SO2 orange and SO3 reddish). However, the final result of the restoration may differ significantly from the shade sample.



Substructure preparation

The substructure before sandblasting, processed with a fine, cross-cut tungsten carbide bur.

Sandblast the substructures with 125 μ m aluminum oxide at a pressure of 2 bar. Use a grit size of 250 μ m and a pressure of 3–4 bar for precious metal-free alloys. Please adhere to the manufacturer's instructions for preparation of the substructure.



The substructure oxidized according to the manufacturer's instructions.

⚠ **Important:** Bonding alloys containing zinc (Zn) must be sandblasted and oxidized, and after oxidation firing, etched in a clean, warm acidic bath for approx. five mins. Any etching residue must be removed with steam.



Wash opaque firing

Powder opaque

Mix the powder opaque with VITA VM OPAQUE FLUID to a thin, watery consistency and apply to the clean, dry substructure with a brush suitable for opaque materials.

VITA SPRAY-ON procedure

The wash opaque can also be applied using the VITA SPRAY-ON procedure. Mix the powder wash opaque with VITA SPRAY-ON LIQUID in the appropriate glass container and spray homogeneously onto the substructure surface. See separate working instructions for VITA SPRAY-ON (No. 492M).

Paste opaque

Alternatively, paste wash opaque can be used. To apply, massage it into the surface of the substructure in a thin layer.

⚠ **Note:** The pastes should be stirred before use with a glass or plastic instrument. If the OPAQUE PASTE is difficult to stir after longer periods of storage, its original consistency can be restored by adding VITA VM PASTE FLUID.

The paste opaque requires a longer pre-drying time in order to dry. Please observe the recommended firing cycles. The paste opaque must not come into contact with water, since this may result in cracks and bubble formation in the opaque during firing.

Recommended firing - wash firing:

	Pre-dry.	→ min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
Powder	500	2.00	5.12	75	890	2.00	5.12
Paste	500	4.00	5.12	75	890	2.00	5.12



The fired wash opaque on a ceramic firing tray.



Opaque firing

Mix the opaque powder to a creamy consistency with VITA VM OPAQUE FLUID, apply with a brush or glass instrument to mask the surface to be veneered and fire as recommended.

As an alternative, the opaque paste can be applied to the dry substructure. The opaque can also be applied using the VITA SPRAY-ON procedure. The classification table for the OPAQUE materials can be found on page 26.

Recommended firing - opaque firing:

	Pre-dry.	→ min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
Powder	500	2.00	5.12	75	890	1.00	5.12
Paste	500	4.00	5.12	75	890	1.00	5.12



The opaque on a ceramic firing tray shows a light surface glaze after firing.

Guidelines for reliable veneering of precious metal-free alloys

Since substructures made of precious metal-free alloys are poor heat conductors and demonstrate a different behavior to precious metal alloys, the following points must be observed when veneering non-precious metal alloys with VITA VM 13:

- Use only special ceramic crucibles when casting precious metal-free alloys.
- Use only new material for casting.
- Sharp edges must be avoided when finishing the frameworks.
- Sandblast with 250 μm aluminum oxide at a pressure of 3-4 bar. Please observe the alloy manufacturer's instructions!!!
- To avoid discoloration, all surfaces not scheduled to be veneered, should be sandblasted or polished with rubber polishers after each firing process.
 Then the substructure needs to be thoroughly cleaned.
- In order to achieve secure bond between a non-precious metal alloy and VITA VM 13, the wash opaque firing temperature must be increased by 50 °C and the opaque firing by 30 °C. This allows better coating of the surface and improves bonding.

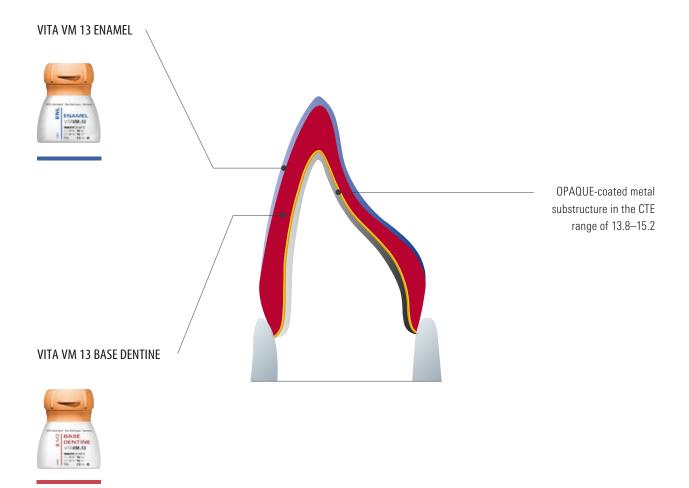
Recommended firing – wash opaque firing of precious metal-free alloys:

	Pre-dry. °C	→ min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
Powder	500	2.00	5.52	75	940	2.00	5.52
Paste	500	4.00	5.52	75	940	2.00	5.52

Recommended firing - opaque firing for precious metal-free alloys:

	Pre-dry.	→ min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
Powder	500	2.00	5.36	75	920	1.00	5.36
Paste	500	4.00	5.36	75	920	1.00	5.36

 \triangle **Note:** The fired opaque demonstrates a high degree of surface glaze and a glassy, transparent appearance.



After applying WASH OPAQUE and OPAQUE, VITA VM 13 BASIC layering consists of the application of BASE DENTINE and ENAMEL.

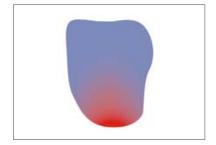
The color-bearing BASE DENTINE materials, which provide good coverage, are the ideal prerequisite for creating veneers with intensive shades.

With this two-layer alternative, VITA offers an ideal solution for the reproduction of optimal shade results in the case of thin walls. Additionally, the intensive shade effect of the BASE DENTINE materials permits generous use of the ENAMEL materials, which create the desired translucency.

After applying OPAQUE material, the user is able to prepare a natural restoration with a lifelike appearance with only two layers.

⚠ **Note:** The intensity of the restoration can be varied with different layer thicknesses of BASE DENTINE and ENAMEL. The thicker the BASE DENTINE layer, the more intensive the shade of the restoration. The thicker the ENAMEL layer, the paler the shade of the restoration.

The use of CHROMA PLUS materials helps to achieve perfect shade reproduction in the cervical area. To obtain a brighter or warmer shade, the respective BASE DENTINE can either be mixed with SUN DENTINE or replaced by SUN DENTINE. When using CHROMA PLUS or SUN DENTINE materials, the final result of the restoration may differ significantly from the shade sample.





Metal substructures coated with OPAQUE

To allow for later, easy removal of the restoration, insulate the model beforehand with the VITA Modisol pen.



VITA MODELLING FLUID RS

For mixing any dentin, incisal or additional materials. Its smooth consistency allows for extended and wet processing, while also ensuring good stability. This fluid is perfectly suited for use in larger restorations and multi-unit bridges.



Application of VITAVM®13 BASE DENTINE

Apply the desired shade of BASE DENTINE starting from the neck, to obtain the required complete tooth shape.

The centric, lateral and protrusive occlusion should already be checked in the articulator during this stage.



To obtain adequate space for the enamel, removal of a corresponding amount of the BASE DENTINE material according to the layering pattern, is required.



Application of VITAVM®13 ENAMEL

Apply several small portions of ENAMEL to complete the crown mould, beginning from the middle third of the crown. To compensate for firing shrinkage, the size of the mould should be prepared somewhat larger.

The classification tables for the VITA VM 13 ENAMEL materials can be found on page 26.



Prior to the first dentine firing, the individual units of bridges must be separated in the interproximal areas down to the substructure.



Restoration after completion of layering; ready for first dentine firing.

Recommended firing - first dentine firing

Pre-dry. °C	min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
500	6.00	6.55	55	880	1.00	6.55



Restoration after first dentine firing.



Corrections of shape/further layering

Insulate the model once more with the VITA Modisol pen. The interdental spaces and the basal surface of the pontic must be filled with BASE DENTINE.



Apply BASE DENTINE starting from the neck, and add ENAMEL in the body area up to the incisal area to perform subsequent corrections of the shape.

Recommended firing - second dentine firing

Pre-dry. °C	→ min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
500	6.00	6.44	55	870	1.00	6.44



Bridge and crown after second dentine firing.



Finishing

Finish the bridge or crown respectively. For glaze firing, the entire surface must be ground evenly and grinding particles must be removed carefully.



In case of formation of dust, use an extraction system or wear a face mask. Additionally, protective goggles must be worn when grinding the fired ceramic.



Recommended firing - glaze firing

Pre-dry. °C	min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
500	0.00	4.45	80	880	2.00	_



If required, the entire restoration can be coated with VITA AKZENT PLUS GLAZE and then individualization can be carried out using the VITA AKZENT PLUS stains. (see VITA AKZENT PLUS working instructions, No. 1925)

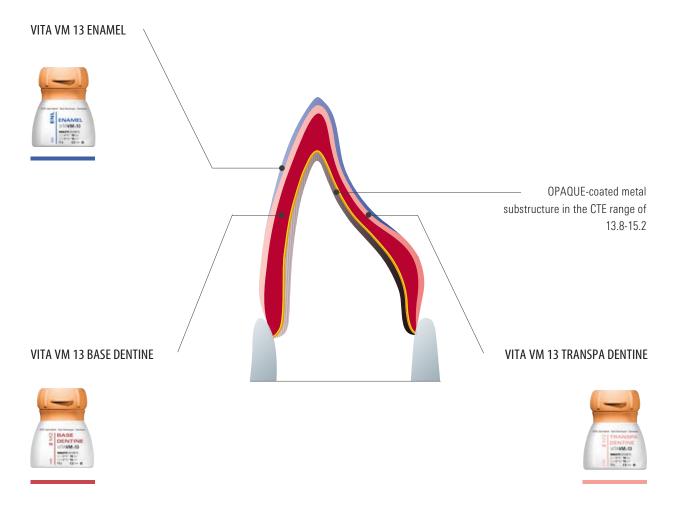
Recommended firing - glaze firing with VITA AKZENT® PLUS

Pre-dry. °C	→ min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
500	4.00	4.45	80	880	1.00	_



Completed restoration on the model.

⚠ **Note:** If the restoration needs to be adjusted (ground) when it is tried in, it must be smoothed again. Polishing or glaze firing have proved to be very suitable.



After applying WASH OPAQUE and OPAQUE, VITA VM 13 BUILD-UP layering consists of the application of BASE DENTINE, TRANSPA DENTINE and ENAMEL.

The combination of color-bearing BASE DENTINE and translucent TRANSPA DENTINE in the BUILD-UP layering creates an enhanced effect of depth in the restoration. The use of the three-layer method permits reduced and more individual application of the ENAMEL materials. As a result, restorations have a lifelike and natural appearance.

By combining ENAMEL and TRANSPA DENTINE according to the layer thickness of BASE DENTINE, the intensity of the shade can be individualized. An increased proportion of BASE DENTINE results in an intensified shade, whereas larger quantities of TRANSPA DENTINE and ENAMEL will reduce the intensity of the shade.

⚠ **Note:** The shade effect of the restoration is mainly influenced by BASE DENTINE.

Analogous to natural teeth, the TRANSPA DENTINE materials create a harmonious transition to the enamel.

The use of CHROMA PLUS materials helps to achieve perfect shade reproduction in the cervical area. To obtain a brighter or warmer shade, the respective BASE DENTINE can either be mixed with SUN DENTINE or replaced by SUN DENTINE. When using CHROMA PLUS or SUN DENTINE materials, the final result of the restoration may differ significantly from the shade sample.





Metal substructures coated with OPAQUE

To allow for later, easy removal of the restoration, insulate the model beforehand with the VITA Modisol pen.



VITA MODELLING FLUID RS

For mixing any dentin, incisal or additional materials. Its smooth consistency allows for extended and wet processing, while also ensuring good stability. This fluid is perfectly suited for use in larger restorations and multi-unit bridges.



Application of VITAVM®13 BASE DENTINE

Apply the desired shade of BASE DENTINE starting from the neck, to obtain the required complete tooth shape.

The centric, lateral and protrusive occlusion should already be checked in the articulator during this stage.



Application of VITAVM®13 TRANSPA DENTINE

TRANSPA DENTINE is applied in the required complete tooth shape.



To obtain sufficient space for the enamel, the volume of the TRANSPA DENTINE must be reduced accordingly.



Application of VITAVM®13 ENAMEL

To complete the crown, apply several small portions of ENAMEL to the upper third of the crown. To compensate for firing shrinkage, the size of the mould should be prepared somewhat larger.

The classification tables for the VITA VM 13 ENAMEL materials can be found on page 26.



Prior to firing, the individual units of bridges must be separated in the interdental areas down to the substructure.



Restoration prior to first dentine firing.

Recommended firing - first dentine firing

Pre-dry. °C	→ min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
500	6.00	6.55	55	880	1.00	6.55



Restoration after first dentine firing.



Corrections of shape/further layering

Insulate the model once more at the pontic with the VITA Modisol pen. The interdental spaces and the basal surface of the pontic must be filled with BASE DENTINE.



Subsequent corrections of the shape in the body area are carried out using TRANSPA DENTINE \dots



... and ENAMEL in the incisal area.

Recommended firing - second dentine firing

Pre-dry. °C	min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
500	6.00	6.44	55	870	1.00	6.44



Bridge and crown after second dentine firing.



Finishing

Finish the bridge or crown respectively. For glaze firing, the entire surface must be ground evenly and grinding particles must be removed carefully.



In case of formation of dust, use an extraction system or wear a face mask. Additionally, protective goggles must be worn when grinding the fired ceramic.



Recommended firing - glaze firing

Pre-dry. °C	→ min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
500	0.00	4.45	80	880	2.00	-



If required, the entire restoration can be coated with VITA AKZENT PLUS GLAZE and then individualization can be carried out using the VITA AKZENT PLUS stains. (see VITA AKZENT PLUS working instructions, No. 1925)

Recommended firing - glaze firing with VITA AKZENT® PLUS

Pre-dry. °C	— → min.	min.	°C/min.	approx. temp. °C	min.	VAC min.
500	4.00	4.45	80	880	1.00	_



Completed restoration on the model.

⚠ **Note:** If the restoration needs to be adjusted (ground) when it is tried in, it must be smoothed again. Polishing or glaze firing have proved to be very suitable.

	Pre-dry. °C	→ min.	min.	°C/min.	approx. temp. °C	— → min.	VAC min.
Oxidation firing	Please o	bserve allo	y manufac	cturer's ins	tructions !!	!	
WASH OPAQUE firing	500	2.00	5.12	75	890	2.00	5.12
WASH OPAQUE PASTE firing	500	4.00	5.12	75	890	2.00	5.12
OPAQUE firing	500	2.00	5.12	75	890	1.00	5.12
OPAQUE PASTE firing	500	4.00	5.12	75	890	1.00	5.12
WASH OPAQUE firing for precious metal-free alloys**	500	2.00	5.52	75	940	2.00	5.52
WASH OPAQUE PASTE firing for precious metal-free alloys**	500	4.00	5.52	75	940	2.00	5.52
OPAQUE firing for precious metal-free alloys**	500	2.00	5.36	75	920	1.00	5.36
OPAQUE PASTE firing for precious metal-free alloys**	500	4.00	5.36	75	920	1.00	5.36
MARGIN* firing	500	6.00	7.05	55	890	2.00	7.05
EFFECT LINER* firing	500	6.00	7.05	55	890	1.00	7.05
First dentine firing	500	6.00	6.55	55	880	1.00	6.55
Second dentine firing	500	6.00	6.44	55	870	1.00	6.44
Glaze firing	500	0.00	4.45	80	880	2.00	_
Glaze firing VITA AKZENT PLUS	500	4.00	4.45	80	880	1.00	_
Corrective firing with CORRECTIVE*	500	4.00	6.00	50	800	1.00	6.00

^{*} Indication range, see pages 28/29

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 tray and the size of the workpiece during the firing cycles are important for the firing result.

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.

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 critical 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.

Explanation of the firing parameters:

Start temperature

Pre-dry. °C

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

^{**} Note: Further information on the procedure with substructures made of precious metal-free alloys can be found on page 15.

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

VITA SYSTEM 3D-MASTER shades	SYSTEM 3D-MASTER shades OPAQUE MARG		EFFECT LINER**	CHROMA PLUS**	ENAMEL
0M1	OP0	M1	EL1	_	ENL
0M2	OP0	M1	EL1	_	ENL
0M3	OP0	M1	EL1/EL2*	-	ENL
1M1	OP1	M1/M7*	EL1/EL2*	CP1	ENL
1M2	OP1	M1/M7*	EL2	CP1/CP2*	ENL
2L1.5	OP2	M1/M7*	EL1/EL2*	CP1/CP2*	ENL
2L2.5	OP2	M1/M4*	EL1/EL3*	CP2/CP3*	ENL
2M1	OP2	M1/M4*	EL1/EL6*	CP1/CP5*	ENL
2M2	OP2	M1/M4*	EL1/EL3*	CP1/CP3*	ENL
2M3	OP2	M4	EL2/EL4*	CP3	ENL
2R1.5	OP2	M1/M7*	EL1/EL6*	CP1/CP5*	ENL
2R2.5	OP2	M1/M4*	EL2/EL4*	CP1/CP3*	ENL
3L1.5	OP3	M4/M7*	EL2/EL6*	CP2/CP5*	ENL
3L2.5	OP3	M4/M7*	EL4/EL6*	CP2/CP5*	ENL
3M1	OP3	M7	EL1/EL6*	CP1/CP5*	ENL
3M2	OP3	M4/M7*	EL2/EL6*	CP3/CP5*	ENL
3M3	OP3	M4/M9*	EL4/EL6*	CP4	ENL
3R1.5	OP3	M7	EL2/EL3*	CP1/CP5*	ENL
3R2.5	OP3	M4/M7*	EL5/EL6*	CP4/CP5*	ENL
4L1.5	OP4	M7	EL6	CP5	END
4L2.5	OP4	M4/M9*	EL3/EL4*	CP4/CP5*	END
4M1	OP4	M7	EL6	CP5	END
4M2	OP4	M4/M9*	EL2/EL3*	CP3/CP5*	END
4M3	OP4	M9	EL5/EL6*	CP4/CP5*	END
4R1.5	OP4	M7/M8*	EL2/EL3*	CP5	END
4R2.5	OP4	M7/M9*	EL3/EL4*	CP4/CP5*	END
5M1	OP5	M7/M8*	EL3/EL6*	_	END
5M2	OP5	M7/M9*	EL5/EL6*	-	END
5M3	OP5	M5/M9*	EL3/EL4*	_	END

VITA classical A1–D4 shades	OPAQUE	MARGIN**	EFFECT LINER**	CHROMA PLUS**	ENAMEL
A1	A1	M1/M7*	EL2	CP1	ENL
A2	A2	M4/M7*	EL1/EL3*	CP2	ENL
A3	A3	M4	EL4/EL6*	CP2/CP3*	ENL
A3,5	A3,5	M4/M9*	EL5/EL6*	CP2/CP3*	END
A4	A4	M4/M9*	EL1/EL3*	CP2/CP4*	END
B1	B1	M1/M4*	EL1/EL2*	CP1	END
B2	B2	M1/M4*	EL1/EL4*	CP1	END
В3	В3	M4	EL2/EL4*	CP2/CP3*	END
B4	B4	M4/M9*	EL4/EL6*	CP3	END
C1	C1	M1/M4*	EL1/EL6*	CP1	END
C2	C2	M4/M7*	EL2/EL6*	CP1/CP5*	END
C3	СЗ	M4/M7*	EL6	CP1/CP5*	ENL
C4	C4	M4/M7*	EL3/EL6*	CP5	ENL
D2	D2	M1/M9*	EL2/EL6*	CP1/CP5*	END
D3	D3	M4/M7*	EL2/EL3*	CP2/CP5*	END
D4	D4	M1/M4*	EL2/EL6*	CP2/CP5*	END

^{*} Mixing ratio 1:1

^{**} Indication range, see pages 28/29



VITA MODELLING FLUID RS

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



VITA VM OPAQUE FLUID

Especially for mixing the VITA VM powder opaque materials.

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

VITA VM PASTE FLUID

Liquid for mixing the VITA VM paste opaque materials



VITA MODELLING FLUID (not included in the assortment)

For mixing all dentine, incisal and additional materials. VITA MODELLING FLUID avoids rapid drying of the ceramic material. The liquid also causes increased plasticity when layering.



VITA VM MODELLING FLUID (not included in the assortment)

For mixing BASE DENTINE, TRANSPA DENTINE, ENAMEL and additional materials. VITA VM MODELLING LIQUID provides excellent stability characteristics during layering and allows faster evaporation of the liquid. Perfectly suitable for the fabrication of small restorations or for processing without the permanent use of an extraction unit.



VITA HIGH SILVER MODELLING LIQUID (not included in the assortment) Special anti-greening liquid for high silver content alloys (silver content > 30 %).

VITA VM 13 EFFECT LINER - to control the fluorescence from the depth of the restoration - universally suitable to support and intensify the base shade - applied in the gingival area, they enhance the distribution of light	EL1 EL2 EL3 EL4 EL5 EL6	snow cream tabac golden fleece papaya sesame	white beige brown yellow orange green-yellow	EFFECT UNER VITAVM-13
VITA VM 13 MARGIN - to create an esthetic transition in the case of a labially shortened metal coping - after the application, the plastified MARGIN material must be hardened through the supply of heat; it is recommended to use a hairdryer or radiated heat from the furnace to stabilize the shoulder	M1 M4 M5 M7 M8 M9	icy beige wheat amber seashell tan beach	white yellow amber light beige pastel-brown light orange	MARGIN VIIAVM-13
VITA VM 13 EFFECT CHROMA - color-intensive modifier porcelains - to accentuate certain color areas of the tooth - to vary the lightness value in the neck, dentine and enamel areas	EC1 EC2 EC3 EC4 EC5 EC6 EC7 EC8 EC9 EC10	ghost linen pale banana lemon drop golden rod sunflower light salmon toffee doe larch gravel	white sand-beige light yellow tender lemon yellow light orange orange pink beige-brown brown green-brown green-grey	CHROMA VIAVMAIS O
VITA VM 13 MAMELON - highly fluorescent material, which is mainly used in the incisal area - for shade characterization between incisal edge and dentine	MM1 MM2 MM3	ecru mellow buff peach puff	beige warm yellow-brown tender orange	MAMELON WITHOUT BE
VITA VM 13 CHROMA PLUS - Chroma Plus materials can be used to achieve more intensive shade reproduction in the cervical region (especially with VITA classical A1-D4 shades) - in case of thin walls, they enhance the shade in an efficient manner	CP1 CP2 CP3 CP4 CP5	ivory almond moccasin caramel burlywood	ivory beige light orange-brown orange green-brown	PLUS WINVM-13

VITA VM 13 CORRECTIVE - with reduced firing temperature (830°C) for corrections after glaze firing - in three nuances for neck, dentine and enamel areas	COR1 COR2 COR3	neutral sand ochre	neutral beige brown	CORRECTIVE VITAWM-13
VITA VM 13 SUN OPAQUE — for mixing the respective opaque shades — in three different nuances	\$01 \$02 \$03	yellowish medium reddish	yellowish orange reddish	SUN OPAQUE WITAWA-13
VITA VM 13 SUN DENTINE — for a "sunnier" and warmer shade result — to be used in the dentine and body area	SD1 SD2 SD3	sun light sun rise sun set	light yellow light orange orange-red	SUN DENTINE WITAWA.13
VITA VM 13 EFFECT ENAMEL - can be used for all enamel areas of the natural tooth - universally suitable translucent enamel effect material - to achieve a natural effect of depth	EE1 EE2 EE3 EE4 EE5 EE6 EE7 EE8 EE9 EE10 EE11	mint cream pastel misty rose vanilla sun light navajo golden glow coral water drop silver lake blue drizzle	whitish-translucent pastel pink-translucent yellowish yellowish-translucent reddish-translucent orange-translucent red-translucent bluish-translucent blue greyish-translucent	EFFECT ENAMEL WITMINS
VITA VM 13 EFFECT PEARL - only suitable for effects on the surface, not for layering in - perfectly suitable for bleached restorations - to obtain nuances of yellow and red	EP1 EP2 EP3	pearl pearl blush pearl rose	shade in pastel-yellow shade in pastel-orange shade in pastel-rosé	EFFECT PEARL WITAVMA13 CL
VITA VM 13 EFFECT OPAL — to create the opal effect in restorations of young and highly translucent teeth	E01 E02 E03 E04 E05	opal opal whitish opal bluish opal blue opal dark violet	neutral, universally suitable whitish bluish blue dark violet	EFFECT OPAL WITAWA 13

VITA VM 13 GINGIVA – to restore the original gingival situation – are applied and fired during the first and / or second dentine firing – color nuances range from orange-red and reddish to brown-red	G1 G2 G3 G4 G5 G0L G0D	rose nectarine pink grapefruit rosewood cherry brown light flesh dark flesh	dusky pink orange-pink pink brown-red dark red light pink dark pink	GINGIVA VITAVM-13
VITA VM 13 COLOR OPAQUE - shade-intensive opaque materials for the characterization of enamel and cervical areas	C01 C02 C03	gold brown lilac	orange brown lilac	COLOR OPAQUE VIVAM-13 O







	VITA VM 13 BASIC KIT*/**/**** BASIC assortment for BASIC layering					
Quantity	Contents	Material				
1	12 g	WASH OPAQUE WO				
5	12 g	OPAQUE° OP1-OP5				
3	12 g	SUN OPAQUE SO1-SO3				
5	12 g	CHROMA PLUS CP1—CP5				
26	12 g	BASE DENTINE° 1M1–5M3				
3	12 g	SUN DENTINE SD1—SD3				
2	12 g	ENAMEL° ENL, END				
1	12 g	NEUTRAL° NT				
1	12 g	WINDOW° WIN				
3	12 g	CORRECTIVE COR1—COR3				
1	50 ml	VITA MODELLING FLUID RS				
1	50 ml	VITA VM OPAQUE FLUID				
1	_	Shade indicator				
1	_	VITA Toothguide 3D-MASTER				
1		Working Instructions				

- * also available as BASIC KIT SMALL with reduced range of materials.
- ** also available as BASIC KIT classical in the VITA classical A1–D4 shades and as BASIC KIT SMALL classical in the following six shades: A1, A2, A3, A3.5, B3, D3
- *** each assortment also available with PASTE OPAQUE

[°] also available in 50 g

VITA VM 13 BUILD UP KIT* Add-on assortment for BUILD-UP layering				
Quantity	Contents	Material		
26	12 g	TRANSPA DENTINE° 1M1–5M3		
1	50 ml	VITA MODELLING FLUID RS		

- * also available as BUILD UP KIT SMALL in the following fifteen shades: 1M1, 1M2, 2M1, 2M2, 2M3, 3L1.5, 3L2.5, 3M1, 3M2, 3M3, 3R1.5, 3R2.5, 4M1, 4M2, 4M3
- ** also available as BUILD UP KIT classical in the VITA classical A1–D4 shades and as BUILD UP KIT SMALL classical with six shades
- ° also available in 50 g

VITA VM 13 CLASSICAL COLOR KIT*/** Add-on assortment for 3D-MASTER users						
Quantity	Contents	Material				
16	12 g	OPAQUE A1-D4				
16	12 g	BASE DENTINE° A1-D4				
16	12 g	TRANSPA DENTINE° A1-D4				
1	50 ml	VITA MODELLING FLUID RS				
1	50 ml	VITA VM OPAQUE FLUID				
1	_	Shade indicator				
1	_	VITA classical A1-D4 shade guide				
1	_	Working Instructions				

- * also available with OPAQUE PASTE
- ** Assortment for 3D-MASTER customers who wish to add VITA classical shades to their assortment
- ° also available in 50 g



VITA VM 13 PROFESSIONAL KIT* For incorporating natural effects and characteristics			
Quantity	Contents	Material	
11	12 g	EFFECT CHROMA EC1-EC11	
3	12 g	MAMELON MM1–MM3	
3	12 g	EFFECT PEARL EP1-EP3	
5	12 g	EFFECT OPAL E01–E05	
11	12 g	EFFECT ENAMEL EE1–EE11	
6	12 g	EFFECT LINER EL1—EL6	
4	_	Shade guides	

^{*} also available as PROFESSIONAL KIT SMALL in the following shades: EC1, EC4, EC6, EC8, EC9, MM2, EP1, E02, EE1, EE3, EE7, EE8, EE9, EE10, EE11



VITA VM 13 BLEACHED COLOR KIT* Ultra-bright shades for the reproduction of bleached teeth			
Quantity	Contents	Material	
1	12 g	OPAQUE OPO	
3	12 g	BASE DENTINE 0M1-0M3	
3	12 g	TRANSPA DENTINE 0M1-0M3	
1	12 g	ENAMEL ENL	
1	12 g	NEUTRAL NT	
1	12 g	WINDOW WIN	
1	50 ml	VITA MODELLING FLUID RS	
1	50 ml	VITA VM OPAQUE FLUID	
1	_	BLEACHED SHADE GUIDE SHADE GROUP OM	
1	_	Working Instructions	

^{*}also available with OPAQUE PASTE



VITA VM 13 GINGIVA KIT* Gingiva materials with natural effects		
Quantity	Contents	Material
5	12 g	GINGIVA G1– G5
2	12 g	GINGIVA OPAQUE GOL, GOD
1	_	GINGIVA shade guide

^{*}also available with OPAQUE PASTE



VITA VM 13 MARGIN KIT For ceramic shoulder design			
Quantity	Contents	Material	
6	12 g	MARGIN M1, M4, M5, M7, M8, M9	
1	_	MARGIN shade guide	

VITAVM_®13 - Physical properties

Property	Unit of measure	Value
Coefficient of thermal expansion - CTE (25 - 500°C)	10 ⁻⁶ ⋅ K ⁻¹	13.1 – 13.6
Solubility in acids	μg/cm²	approx. 9.4
3-point flexural strength	MPa	approx. 111

VITAVM_®13 – Chemical composition

Components	Wt%
SiO ₂	35 – 75
Al_2O_3	9 – 17
K_2O	7 – 13
Na ₂ O	4 – 8
CaO	≤ 2,5
B_2O_3	≤ 2
CeO ₂	≤ 18
TiO ₂	≤ 14
ZrO ₂	≤ 20
BaO	≤ 4
SnO ₂	≤ 7
Mg0	≤ 1
Fe_2O_3	≤ 5

Indication:

VITA VM 13 can be used for metal-veneered substructures with a high proportion of gold or reduced proportion
of precious-metal, and for palladium-based and non-precious-metal alloys with a CTE value (26°C-600°C) of
13.8 - 15.2 · 10⁻⁶ · K⁻¹.

Contraindication:

- For substructures not within the recommended CTE range
- Parafunctions (e.g. bruxism)
- If the minimum wall thickness of the ceramic cannot be adhered to
- In cases of inadequate oral hygiene

Intended purpose:

• VITA VM 13 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	MD	Shelf life	\subseteq
For professionals only	Rx only	Product number	REF
Refer to instructions for use	[]i	LOT number (batch)	LOT

IMPORTANT INFORMATION:

Information on troubleshooting can be found under FAQs - metal ceramics - on our website.

The following products require hazard identification:		
VITA VM OPAQUE FLUID	Causes severe skin burns and eye damage May be corrosive to metals. Causes severe eye irritation. 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.	
VITA SPRAY-ON INDICATOR LIQUID and VITA SPRAY-ON LIQUID	Highly flammable liquid and vapor. 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.	

Please refer to the safety data sheet for detailed information!

Safety at work and health protection	While work is in progress, 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.	
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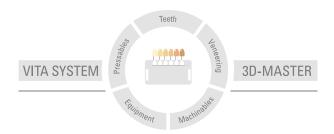
VIIAVM ₆ 13 Notes	

VITAVM ₀ 13 Notes	

VITAVM.13 Notes		
-		

VITA VM 13 veneering material is available in VITA SYSTEM 3D-MASTER and VITA classical A1-D4 shades. Shade compatibility with all VITA 3D-MASTER and VITA classical A1-D4 materials is guaranteed.

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

C € 0124

VM®13 · VITA AKZENT® Plus

MD 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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