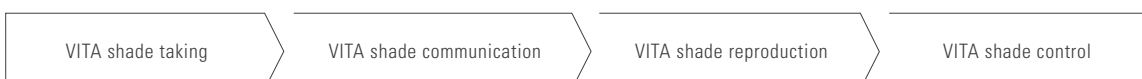
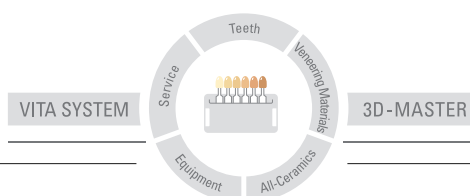


VITAVM[®]LC

Working Instructions



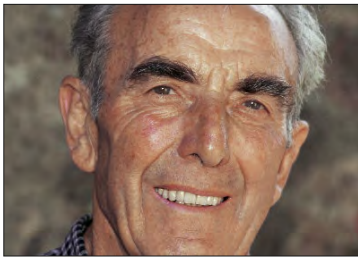
Date of issue: 01.11



VITA

Light-curing microparticle composite for fixed and removable restorations for extraoral use. Available in VITA SYSTEM 3D-MASTER and VITA classical A–D shades

Patient case	4	Inlay	20
VITA SYSTEM 3D-MASTER	5	Veneer	21
Microparticle composite	6	Metal-free crowns and three-unit bridges as long-term temporary restorations	22
Data – facts	7	Individualizing the shade of VITA CAD-Temp	23
Indication range	8	Individualizing VITA acrylic teeth	26
Facts worth knowing about light curing	9	Polymerization	28
Facts worth knowing about the bonding system	10	Polymerization information	29
Framework design and preparation of frameworks	12	Classification tables	30
Processing of VITA VM BOND	14	Additional materials	31
VITA VM LC OPAQUE – processing	15	Assortments	32
BASIC layering	16	Hazard information	35



Successfully completed restoration for a natural appearance

The result of the team work of Dr. med. dent. Ludwig Mesch (Rickenbach) and Richard Zimmermann, Master Dental Technician (Bad Säckingen).



Situation prior to rehabilitation:
Residual dentition requiring extensive rehabilitation.
Due to the extendability, a telescopic restoration was selected.



Wax up for specific planning of shape and function of the restoration according to the patient's wishes.



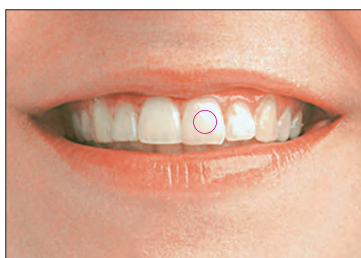
Layering with VITA VM LC.



Restoration seated in the patient's mouth.

Competence for more than 80 years

Shade management is more than just shade determination. At VITA, shade management means incorporating our ever better solutions into a complete process. The key question we have always asked ourselves is: How can we improve shade determination and reproduction? By establishing standardized process steps to increase the efficiency. Dental specialists are nowadays expected to achieve better results while spending less time and money. It is this goal that brings us together.



VITA shade taking

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 (central to gingival area).



The determination of the effects

Natural teeth are unique and a perfect creation of nature. Therefore, after determining the base shade, details of a tooth (translucent zones or anomalies for example) need to be recorded to obtain a perfect match. We recommend the use of a digital photo to analyze details or effects.



VITA shade communication

To ensure perfect reproduction of the determined shade, it is essential to ensure that all parameters are communicated accurately to the dental laboratory. Any misunderstanding leads 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. The software of VITA Easyshade provides a template to have all data on a single sheet – a laboratory communication form. This information will enable you to create a restoration that matches the remaining teeth perfectly in a quick and reliable manner.



VITA shade reproduction

The most important step in reproducing a tooth 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. You can be sure that whichever VITA materials you choose, you will be able to achieve this objective without time-consuming mixing or testing.

VITA shade control

In the last step, qualitative shade evaluation is no longer to be left to the subjective opinion of an individual. Within the VITA process, objective control of the final restoration is the most important prerequisite for ensuring satisfied patients and avoiding additional work. When using VITA VM LC, the VITA Toothguide or the Linearguide 3D-MASTER are used for shade control.

Natural esthetics

Like all VITA VM ceramic materials, VITA VM LC is distinguished by its natural, enamel-like light refraction and reflection behavior. The fine-particle inorganic filler with a primary particle size of a few nanometers has a particularly homogeneous distribution in the VITA VM LC material. This achieves natural scattering of light which ensures the desired degree of translucency.

The schematic diagrams show the differences in scattering of light between a traditionally filled resin (fig. 1) and microfilled VITA VM LC (fig. 2).

Inhomogeneous distribution of the fillers is clearly visible in fig. 1. Clouding of the veneer and rough surfaces may result. VITA VM LC on the other hand, by means of its homogeneous distribution of filler, enables deep penetration of the incident light into the material, which is the reason for its brilliance and translucency (fig. 2).

Excellent polishing characteristics

An essential criterion for dental technicians, dentists and patients: Thanks to the exceptionally fine distribution of the microparticles, the surface of the restoration is very homogeneous and easy to polish. The smooth surface of the restoration is pleasant to the patient and offers superior wearing comfort.

VITA VM LC offers the following additional advantages:

- Optimum processing qualities, e.g. good modelling properties
- Considerable reduction of secondary discolorations and the accumulation of plaque
- Mechanical properties are perfectly matched with the indications
- Outstanding esthetic results and economical in terms of work input
- Accurate shade-taking and shade reproduction in the VITA SYSTEM 3D-MASTER

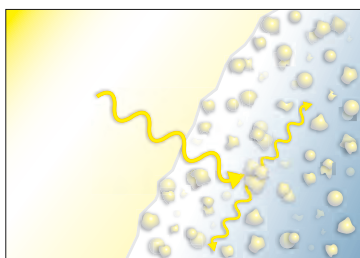


Fig. 1: Light scattering of an acrylic resin with conventional filler

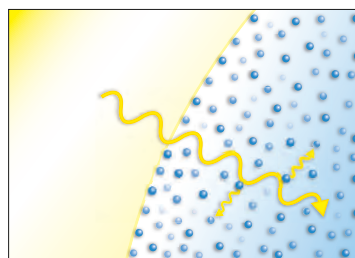


Fig. 2: Light scattering of microfilled VITA VM LC

**Dental acrylics –
a special competence of VITA Zahnfabrik!**

A study on the abrasion behavior of artificial teeth confirmed the results of earlier studies: compared to other tooth brands, VITAPAN acrylic teeth exhibit excellent abrasion resistance. An example which demonstrated once more the capability of VITA R&D in the sector of dental acrylic materials.

This specific know-how has been fully implemented in the development of the VITA VM LC material. It was particularly important in this respect to consider the wishes and demands of our customers with regard to a convincing acrylic veneering material.

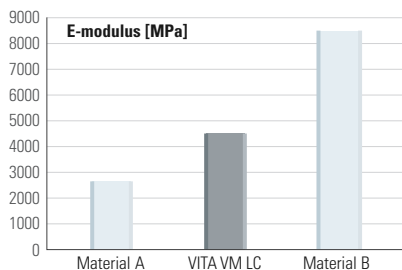
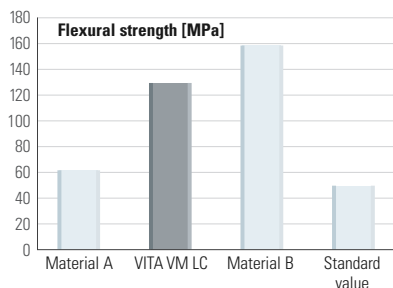
*(Source: Quintessenz Zahntechnik 29, 4, 510-521 (2003).

Material-technical advantages of the microparticle composite

The mechanical properties of VITA VM LC are optimally matched to their areas of indication. All requirements of the international standard (EN ISO 10477), such as water absorption, are easily fulfilled.

Flexural strength/modulus of elasticity

Material properties cannot be evaluated in isolation, but only in relation to other material properties. For example, it is essential to consider the flexural strength of a material in relation to its stiffness. The E-modulus (modulus of elasticity) provides information on the stiffness of a material: the higher its value, the stiffer the material.



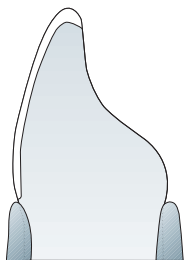
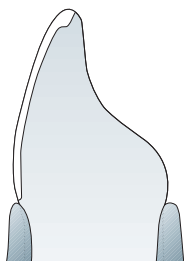
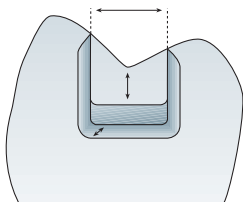
In terms of its flexural strength, VITA VM LC surpasses the standard value as well as that of other reference materials. VITA VM LC purposely refrains from attaining even higher values, e.g. such as those demonstrated by reference product B. Considering the flexural strength of a material in relation to the E-modulus, one can obtain information on its brittleness. With these values in particular, VITA VM LC exhibits an optimum relationship between material properties, i.e. that the material, while having excellent flexural strength, is not brittle.

VITAVM [®] LC – physical properties	Unit of measure	Value
Flexural strength	MPa	approx. 120
E-modulus	MPa	approx. 4000
Deflection	mm	approx. 1.10
Impact strength	KJ/m²	approx. 4.6
Inorganic filler content	wt.-%	45–48

VITA VM LC is a light-curing microparticle composite for fixed and removable restorations for extraoral fabrication.

All alloys and resin framework materials may be used which are suitable for veneering with composite according to the manufacturer's instructions.

VITA VM BOND (bonding system) allows reliable bonding between metal and composite.



Indications:

- Full and partial veneering of crowns, bridges, telescopic crowns, implant suprastructures
- Veneering of acrylic resin frameworks
- Individualization of long-term temporaries made of VITA CAD-Temp and VITA acrylic teeth
- Metal-free crowns and three-unit anterior bridges as long-term temporary restorations

• Inlays

Preparation information

- Boxed-shaped preparation without sharp edges
- The cavity margins must be entirely in the etchable enamel and outside articulation contact points
- Minimum depth on the bottom of the fissure: 1.5 mm
- Minimum isthmus width: 2 mm
- Minimum width of the approximal shoulder: 1.5 mm
- The entire design of the preparation is similar to ceramics

• Veneers

Preparation information

- Labial, anatomical reduction of the hard tooth substance by 0.7 - 1.0 mm
- Supragingival preparation
- Slightly rounded shoulder in the cervical area parallel to the gingival margin
- Chamfer-like approximal margins, saddle-shaped embracing
- Retain approximal, natural contact points
- Chamfer-like embracing of the incisal edge **(1)** or incisal reduction with rounded edge **(2)**, minimum incisal thickness of the veneer: 1 mm

⚠ **Note:** In the posterior area, a minimum thickness of the veneer of 1.5 mm in the central fissure and perfect occlusion must be ensured.

Contraindication:

- Bruxism

How does light curing work?

Radiation with light of certain wavelengths starts radical polymerization in the opaque or the composite owing to the photoinitiators contained in them. During this process the short-chain monomers are linked to form a polymer network. At the same time especially treated inorganic fillers are integrated into this network so that the previously plastic, mouldable composite is transformed into a hard, insoluble material.

What must be considered during light curing?

The effect of the photoinitiators is only ensured if light with a suitable wavelength and sufficient intensity is used. The maximum layer thicknesses should not be exceeded (observe polymerization times and information on pages 28-29!).

To polymerize VITA VM LC, the units must be equipped with lamps emitting light in a wavelength range of 350 nm to 500 nm. The maximum intensity of the lamps should be 470 mW/cm². There are various light sources which can be used for this purpose: e.g. fluorescent lamps, xenon flashlight bulbs, halogen lamps.

As with all chemical reactions, polymerization takes place more rapidly at increased temperatures. Fluorescent lamps are therefore less suitable since their heat emission is minimal. In the polymerization chamber temperatures of 60 – 80°C contribute to achieving fast and accurate polymerization.

Consequences of insufficient light-curing

Insufficient activation by unsuitable or old lamps results in defective networks in the composite. Lack of mechanical stability and poor surface quality lead to premature failure of the restoration. Flaking and secondary discoloration are the consequences. They can be avoided through regular maintenance of the light-curing units by the dental professional.

Fig. 1 shows the consequences of insufficient light curing: storage of the restorations in red wine over eight weeks causes hardly recognizable discolorations in the completely cured restoration (to the left in the photo). The crown that has been polymerized too shortly (i.e. insufficiently cured) (to the right in the photo) reveals strong discolorations.

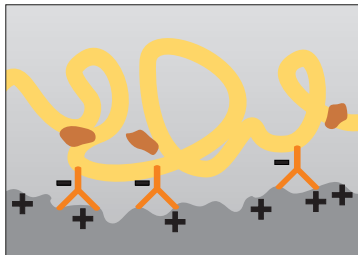


Photo 1: to the left: hardly any discoloration
to the right: strong discolorations





The principle of adhesive bonding is known from daily work: applying adhesive, allowing to dry and bringing the surfaces to be glued into contact. In simple words: VITA VM BOND does the same for VITA VM LC. If you look at it in a more detailed way, however, achieving the BOND, adhesive bonding is a highly complex process.

Some scientific explanations on this subject:

- The metal surface required for bonding is considerably enlarged by microretentions obtained from sandblasting; adhesive bonding is optimized correspondingly.
- Additionally, the energy created by sandblasting results in a charge transfer in the upper metal layer. The resulting positively charged metal surface enters into numerous physical-chemical interactions with the negatively charged electrons of the reactive VITA VM BOND polymer – this is how particularly reliable bonding is achieved.
- The use of the reactive, flexible polymer avoids shrinkage-related marginal gaps, stress or embrittlement at the composite-alloy interface, which would weaken the bond.



Schematic view of the bonding mechanisms:

-  Activated metal surface (+)
-  Reactive polymer, contains:
 -  Polar carboxylate and carboxyl groups (-) which are perfectly aligned towards the surface of the activated metal (+)
-  Color pigment particles

The drying process of VITAVM[®]BOND

Unlike typical light curing, only the solvent is evaporated for the reactive polymer when drying VITA VM BOND. During this process the bonding polymer film is formed on the metal surface. The VITA SICCOTHERM drying unit which has been exclusively developed for drying VITA VM BOND is perfectly suitable for proper drying of the material. The coated framework is placed into the drying unit and the drying process is started by pressing the button. At the end of drying the framework which has been coated with perfectly dried VITA VM BOND can be removed from the drying unit. The user can be sure that VITA VM BOND has been dried completely.

⚠ Note on the use of other bonding systems

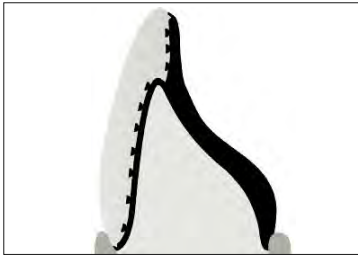
VITA VM LC can also be processed with other bonding systems which condition the framework material for subsequent application of a light curing opaque based on methyl methacrylate (for example, ESPE ROCATEC, GC METALPRIMER II). In these cases, they replace VITAVM BOND.

In all cases, however, the suitability for processing with VITA VM LC must be checked before using a bonding system of other manufacturers. VITA Zahnfabrik does not assume any liability for any damage resulting from lack of suitability of bonding systems of other manufacturers for processing with VITA VM LC and from any product modifications or quality defects of the bonding system in use. The same shall apply to damage resulting from improper handling or processing as well as for damage resulting from inappropriate or faulty working instructions for the bonding systems of other manufacturers.



The framework design depends on the bonding principle selected:

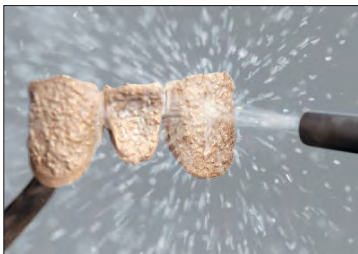
1. Reliable bonding of the composite to the metal is achieved if the VITA VM BOND bonding material is used. Microretentions in the approximal area increase the bond strength. They are not urgently recommended for non-precious metal alloys; however, they should be added when using alloys with a gold, platinum or palladium content of more than 70%. When veneering electroplated secondary elements, microretentions or undercuts must be attached to the tertiary structures or suprastructures.



2. If bonding is to be achieved through the exclusive use of mechanical retentions, retentive beads must be attached and a metal margin (setting, see diagram) must be prepared.



The framework is prepared with cross-cut tungsten carbide burs according to the instructions of the alloy manufacturer. Surfaces not to be veneered are polished with rubber polishers.



Depending on the type of alloy, all surfaces to be veneered must be sandblasted with 110 – 250 μm aluminium oxide (disposable abrasive material) at a pressure of 2.5–3.5 bar. Generally, the instructions of the alloy manufacturers should be adhered to.

⚠ **Note:** When using VITA VM BOND, adequate activation of the metal surface by sandblasting must be ensured.

Framework design and preparation of frameworks



The metal framework is cleaned after sandblasting. Use only dry compressed air (with water separator) or a clean dry brush for cleaning.



Contact with water and moisture must be avoided!

In case of skin contact, the surface must be sandblasted again.

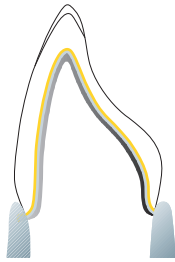
⚠ Note: VITA VM BOND is applied immediately after sandblasting. If the bonding agent is not applied within ten minutes, sandblasting must be repeated prior to the application.

If bonding is to be achieved with mechanical retentions only – i.e. without the bonding system VITA VM BOND – VITA VM LC OPAQUE is applied immediately after the sandblasting process (page 15).



If polymerizing and layering are to be performed on the model, VITA VM LC SEPARATOR must be applied on the stone.

VITA VM LC SEPARATOR is a hazardous material. Observe information on page 35.



As a preparatory step of the VITA VM LC BASIC layering, VITA VM BOND and VITA VM LC OPAQUE are previously applied onto the framework.

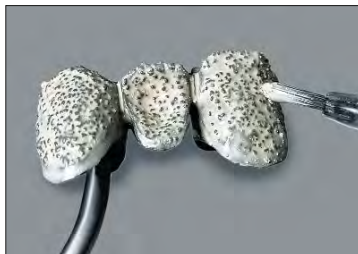


Applying VITAVM.BOND

The BOND must be mixed and applied within 10 minutes after activating (sandblasting) the metal surface. A small scoopful of BOND (0.02 g) is mixed on the mixing pad with an amount of BOND LIQUID corresponding to one gradation (0.2 ml) using a plastic spatula until a creamy consistency is obtained. The powder is crushed first to receive a smooth surface.



⚠ Note: Do not use metal instruments for mixing!
Powder and liquid must be stirred thoroughly with the spatula.



A thin, uniform coat of VITA VM BOND is agitated onto the metal framework using a disposable brush.

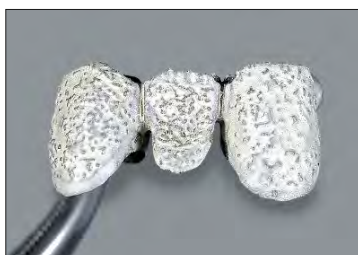
VITA VM BOND LIQUID is a hazardous material.
Observe information on page 35.



Drying VITAVM.BOND

1. The use of the VITA SICCOTHERM drying unit is recommended:
The material is dried at a constant, optimal temperature (see also operating instructions).
2. Alternatively, drying can also be carried out using an infrared lamp (100 – 150 W): Distance to the object: 5 – 10 cm · Drying time: 10 – 15 min

⚠ Note: Formation of bubbles in VITAVM BOND may be caused if the temperature is too high.



Completely dried VITA VM BOND.



Application of VITAVM[®]LC OPAQUE

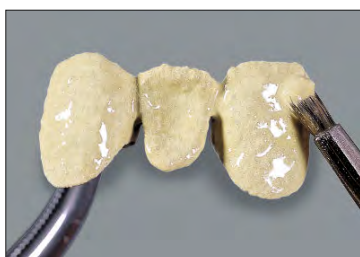
First add liquid into the depression of a black ceramic mixing plate. Then add the powder and stir with a plastic spatula for approx. 30 sec to obtain a homogenous, thin mixture. Mixing ratio: 5 drops of liquid and 1 measuring spoon of powder (to obtain approx. 4 units). The use of a metal spatula is not recommended since it may result in color changes.

⚠ Note: The bottle of the light-sensitive liquid must be sealed immediately after dispensing any liquid.



VITA VM LC OPAQUE LIQUID is a hazardous material.
Observe information on page 35.

⚠ Note: To avoid contaminations and premature polymerization of the opaque, the use of a black mixing plate with lid is recommended.



It is recommended to wet the brush with OPAQUE LIQUID before the opaque is applied. To achieve complete polymerization, the opaque is applied in thin layers onto the framework. Polymerization is carried out after each layer. As many layers of OPAQUE are applied (at least 2) as required to ensure complete coverage of the metal. The mixed opaque must be protected against light (dark cover) between the individual polymerization steps.

⚠ Note: The opaque layer needs to exhibit a wet-lustrous surface before the polymerization!



Observe polymerization times and information on pages 28-29!

Framework completed with VITA VM LC OPAQUE.

To ensure perfect bonding between opaque and dentine, processing should be continued immediately after polymerizing the opaque material or the substructure must be protected against dust and moisture.

⚠ Note: After curing, VITA VM LC OPAQUE must exhibit a dry and silky matt surface. Avoid contamination with dust and contact with moisture.

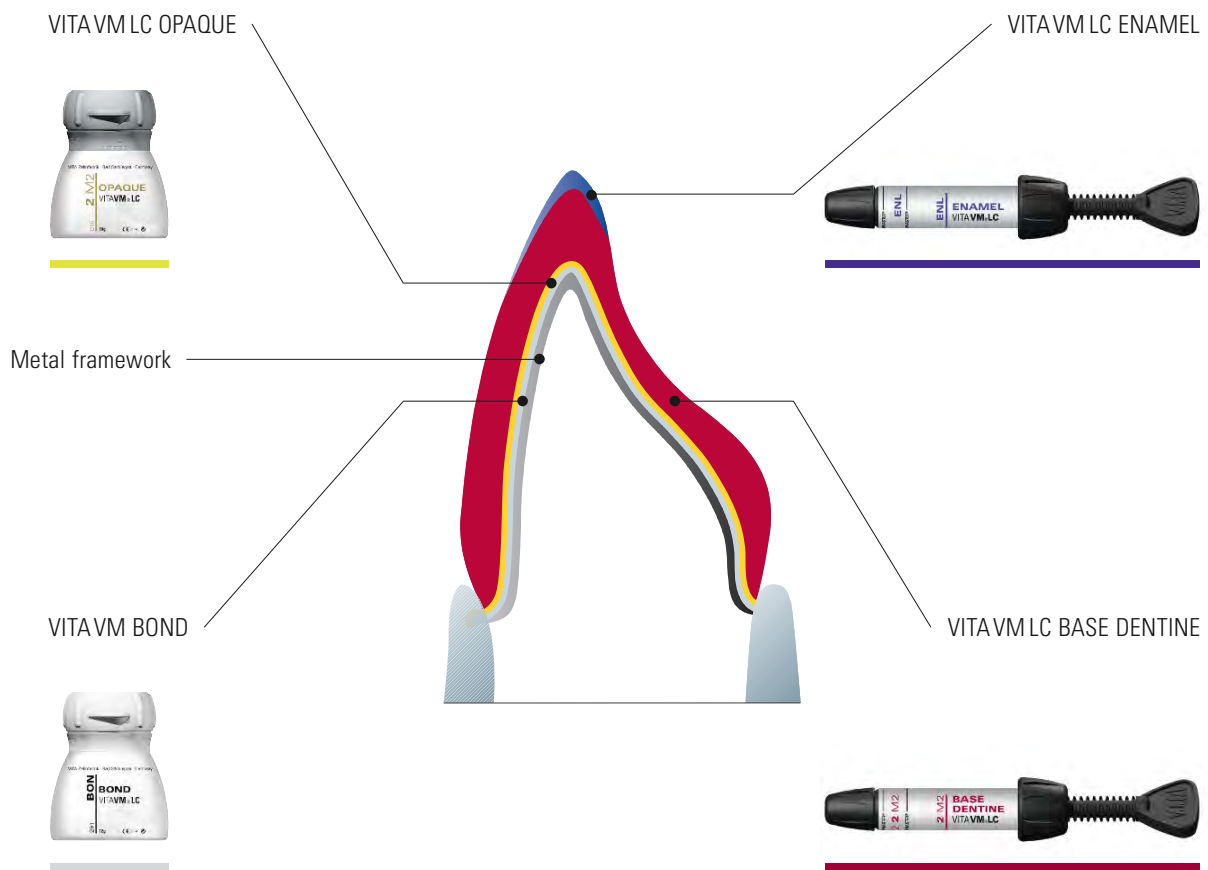
For perfect shade reproduction of concave pontics we recommend to level them out with adjacent crown frameworks using BASE DENTINE and then they are cured in final polymerization process. Then 2-3 thin layers of OPAQUE are applied. Afterwards final polymerization is carried out.



VITAVM SOLVENT is a **cleaning solution** to clean instruments used for processing VITA VM BOND and VITA VM LC OPAQUE.

VITA VM SOLVENT for VITA VM BOND/VITA VM LC OPAQUE is a hazardous material.
Observe information on page 35.

VITA VM[®]LC BASIC layering



After applying VITA VM BOND and VITA VM LC OPAQUE, VITA VM LC BASIC layering consists of the application of two materials: VITA VM LC BASE DENTINE and VITA VM LC ENAMEL.

The color-bearing VITA VM LC BASE DENTINE materials represent the perfect precondition for the preparation of veneers with intensive shades. With this two-layer alternative VITA offers an ideal solution for the reproduction of optimal shade results in case of thin walls.

The user is able to prepare a natural restoration with a lifelike appearance with only two layers. For perfect shade reproduction, the minimum layer thickness of the veneer should not be less than 0.5 mm.

⚠ **Note:** Compared to VITA VM ceramic layering, ENAMEL is exclusively layered in the incisal area when using VITA VM LC.

The use of CHROMA PLUS materials or EFFECT LINER materials helps to achieve perfect shade reproduction in the cervical area or to intensify the basic shade. The VITA VM LC PROFESSIONAL KIT and the VM LC PAINT KIT are available for individualizing and characterizing VITA VM LC.



Framework prepared with VITA VM BOND and VITA VM LC OPAQUE ready for veneering.

⚠ **Note:** The material bottles must be sealed immediately after some material has been dispensed.

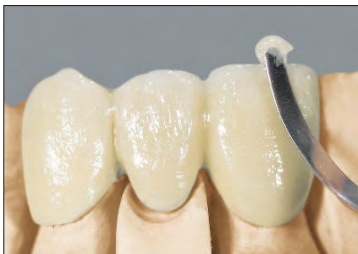


Applying VITAVM[®]LC BASE DENTINE

The desired shade of BASE DENTINE is applied starting from the neck. Adequate space must be provided for the enamel and BASE DENTINE must be applied and shaped or reduced according to the layering pattern. The centric, lateral and protrusive occlusion should be checked in the articulator already during this stage. To accentuate the neck area or to intensify the basic shade, the use of CHROMA PLUS or EFFECT LINER materials is recommended.

The classification table for the VITA VM EFFECT LINER and CHROMA PLUS materials can be found on page 30.

⚠ **Note:** The VITA VM LC materials (BD, EN, EE, NT, EL, CP, G) are adjusted thixotropically, which means that their consistency can be changed - from firmer to softer - by slightly pressing onto them with an instrument. Make sure to avoid inclusion of bubbles.



Applying VITAVM[®]LC ENAMEL

Apply small amount of ENAMEL in the upper third of the veneer surface to complete the crown mould. Then final polymerization is carried out.

⚠ **Information on polymerization:** If a layer thickness of 2 mm is reached during layering, final polymerization must be carried out. The layering process is continued immediately afterwards.

The classification table for the VITA VM LC EFFECT LINER materials can be found on page 30.

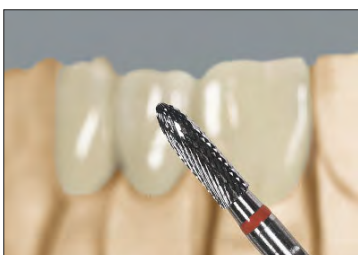
Corrections of the shape during layering: Corrections are carried out after intermediate or final polymerization using fine-cut tungsten carbide burs. For completion, apply desired material onto the cleaned surface wetted with MODELLING LIQUID.

Observe polymerization times and information on pages 28-29!



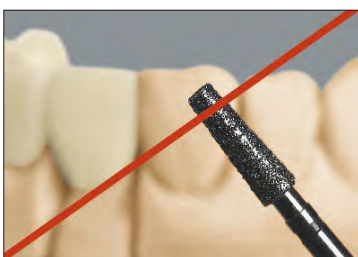
Wet the modelling instrument with VITA VM LC MODELLING LIQUID to facilitate application. Use sparingly! This can also be used on the veneering materials after adjustments made by grinding. The liquid must not be used to thin the powders.

VITA VM LC MODELLING LIQUID is a hazardous material. Observe information on page 35.



Grinding and polishing:

Finishing is carried out with fine-cut tungsten carbide burs at a speed of 15,000 rpm.



We strongly advise against using diamond grinding tools.



Then prepolishing is carried out using a suitable silicone polisher and a small natural haired rotary brush. A C+B polishing material is used for high-luster polishing. Avoid generating excessive heat.

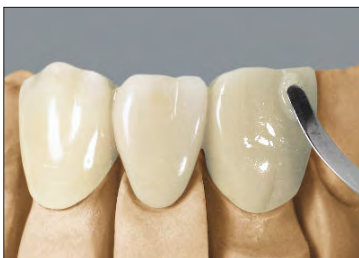
⚠ Note: Carefully performed polymerization and polishing are urgent requirements to obtain a perfect result and avoid the formation of deposits and resulting adverse effects on the shade.



Completed restoration on the model.

Cleaning in the ultrasonic unit:

Leaving the restoration in the ultrasonic unit over an extended period may affect the quality of the material. Content of the alkaline cleaning solution: max. 10%; temperature: max. 40°C. Cleaning with steam results in heat and compressive stress and must generally be avoided.

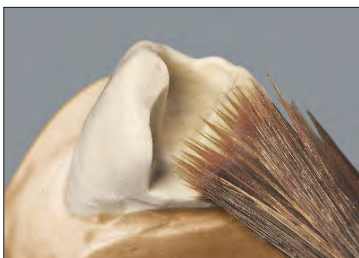


Corrections after polishing:

Use a fine-cut tungsten carbide bur for grinding the surface and then carefully remove any grinding dust. The completely dry surface is wetted with MODELLING LIQUID and BASE DENTINE or ENAMEL are used for subsequent corrections.

Complete as described.

VITA VM LC MODELLING LIQUID is a hazardous material.
Observe information on page 35.



Preparation information on page 8!

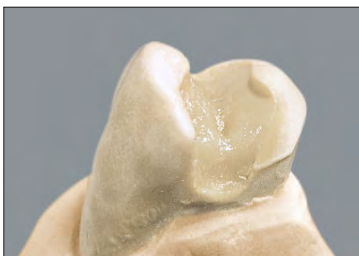
Preparation of the model:

Undercuts should be blocked out with wax first. Additionally, a thin spacer layer can be applied.

Separating:

The die of the inlay is coated with SEPARATOR beyond the preparation border. The procedure must be repeated twice.

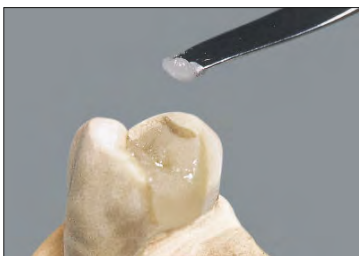
VITA VM LC SEPARATOR is a hazardous material. Observe information on page 35.



Layering:

Build up the inlay bottom with BASE DENTINE materials; then polymerization is carried out.

Observe polymerization times and information on pages 28-29!



Build up the inlay to achieve the desired tooth shape using ENAMEL materials.

The classification tables for the VITA VM LC ENAMEL materials can be found on page 30.

Finishing and polishing should be carried out on a duplicate die. Prior to the integration, all inner surfaces must be sandblasted with 50 – 110 µm aluminium oxide while exerting only little pressure.



Completed inlay.

Cementing:

The harmoniously matched components of the VITA LUTING SET are recommended for cementing. This set allows adhesive bonding of composite restorations and etchable ceramic restorations. Please adhere to the working instructions.



Preparation information on page 8!

Preparation of the model:

Undercuts should be blocked out with wax first. Additionally, a thin spacer layer can be applied.

Separating:

The die of the inlay is coated with SEPARATOR beyond the preparation border. The procedure must be repeated twice.

VITA VM LC SEPARATOR is a hazardous material. Observe information on page 35.



Layering:

Building up with BASE DENTINE materials; then polymerization is carried out.

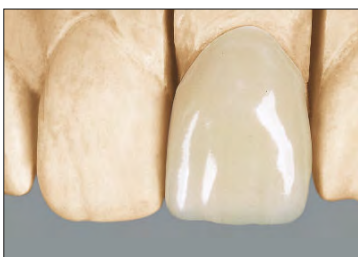
Observe polymerization times and information on pages 28-29!



Building up the tooth with ENAMEL materials.

The classification tables for the VITA VM LC ENAMEL materials can be found on page 30.

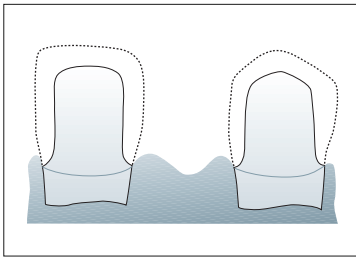
Finishing and polishing should be carried out on a duplicate die. Prior to the integration, all inner surfaces must be sandblasted with 50 – 110 µm aluminium oxide while exerting only little pressure.



Completed veneer.

Cementing:

The harmoniously matched components of the **VITA LUTING SET** are recommended for cementing. This set allows adhesive bonding of composite restorations and etchable ceramic restorations. Please adhere to the working instructions.



Preparation:

A circumferential chamfer is required for adequate material thickness at the preparation margins.

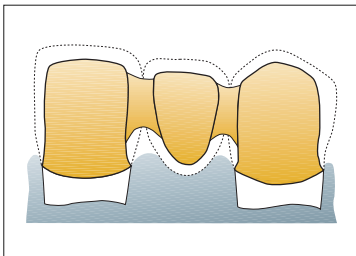
Preparing the model:

Undercuts should be blocked out with transparent wax first.

Separating:

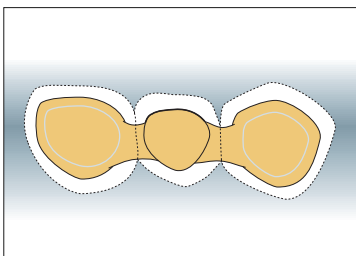
The die is coated with VITA VM LC SEPARATOR beyond the preparation border. The procedure must be repeated at least twice.

VITA VM LC SEPARATOR is a hazardous material.
Observe information on page 35.

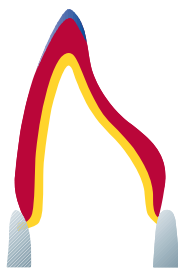


Use BASE DENTINE to model the copings and the pontic in reduced tooth size. The interdental connections must have a diameter of at least 3.5 mm.

Observe polymerization times and information on pages 28-29!



Build up the labial side of the pontic with BASE DENTINE until the build-up level of the copings of the abutment teeth is reached.



Further layering and completion of the entire bridge according to VITA VM LC BASIC layering (see page 16).

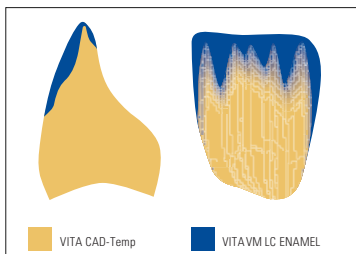
To achieve enhanced esthetic appearance, the shade of temporary restorations made from VITA CAD-Temp can be individualized with VITA VM LC especially in the translucent incisal area of anterior restorations or in the vestibular area of posterior restorations. Even thin layers of VITA VM LC allow to achieve very good results. The VITA VM LC TEETH INDIVIDUALIZATION KIT is available for individualization.



Controlled grinding or reducing of border areas is the precondition for a smooth transition between the VITA CAD-Temp temporary restoration and VITA VM LC.



To ensure reliable bonding of VITA CAD-Temp and VITA VM LC, fine-cut tungsten carbide burs should be used.



⚠ Note: Maximum reduction of VITA CAD-Temp to ensure sufficient stability of the temporary restoration:
Translucent area of temporary anterior restoration: max. 0.5 mm
Vestibular area of temporary posterior restoration: max. 0.3 mm.



The ground surface must be carefully cleaned and wetted with VITA VM LC MODELLING LIQUID to achieve reliable bonding to the VITA CAD-Temp base material. Individualizing is easier if a small quantity of VITA VM LC MODELLING LIQUID is added onto the modelling instrument. Use sparingly.

⚠ Note: The liquid must not be used to thin the materials.

VITA VM LC MODELLING LIQUID is a hazardous material.
Observe information on page 35.



Depending on which type of individualization is to be achieved, the suitable shade is applied: Ten different VITA VM LC PAINT materials are available for this purpose. For fixation of the materials, intermediate polymerization must be carried out.

Observe polymerization times and information on pages 28-29!

⚠ **Note:** VITA VM LC PAINT must not be on the surface and must be completely coated with dentine or enamel materials. When applying the materials, air inclusions must be avoided.

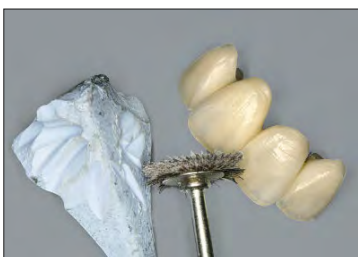


Apply a small quantity of VITA VM LC ENAMEL, EFFECT ENAMEL or NEUTRAL in the upper third of the veneer surface (translucent or vestibular area). Intermediate polymerization can be carried out any time during layering. Then final polymerization is carried out.

Observe polymerization times and information on pages 28-29!



Fine-cut tungsten carbide burs must be used for corrections of contours during individualization.



Polishing

Then prepolishing is carried out using a suitable silicone polisher and a small natural haired rotary brush. A C+B polishing material is used for high-luster polishing. Avoid generating excessive heat.

⚠ **Note:** Carefully performed polymerization and polishing are urgent requirements to obtain a perfect result and avoid the formation of deposits and resulting adverse effects on the shade.



Cleaning

Leaving the completed restoration in the ultrasonic unit over an extended period may affect the quality of the material or bonding of VITA VM LC to VITA CAD-Temp.

Max. residence time in the ultrasonic unit:
approx. 1 minute

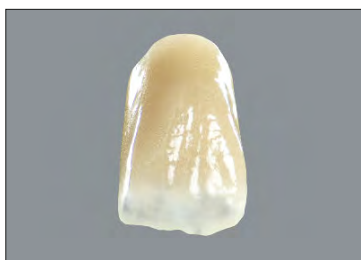
Content of the alkaline cleaning solution:
max. 10%; temperature: max. 40°C.

Cleaning with steam results in heat and compressive stress and must generally be avoided.



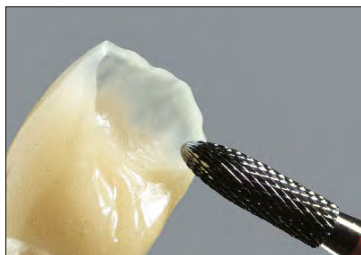
Completed VITA CAD-Temp temporary bridge restoration individualized with VITA VM LC on the working model.



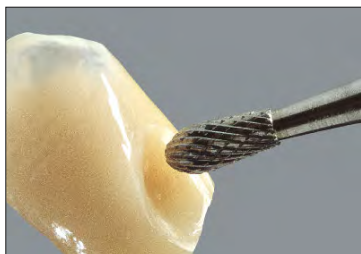


The use of VITA VM LC materials allows you to shape VITA acrylic teeth within a short time while retaining the vivid surface structure and basic shape of the teeth. This way patient-specific esthetics can be achieved using simple and easily reproducible characterization techniques.

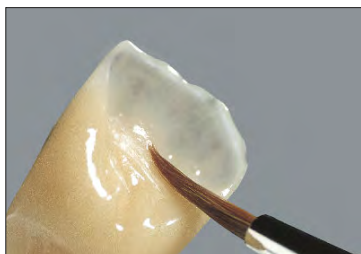
Palatal reduction of the VITA PHYSIODENS anterior is required for individualization in the incisal area. In this way the structure of the labial surface is retained – subsequent, time-consuming contouring of a natural surface relief can be omitted. However, it must be kept in mind that if the remaining layer thickness decreases, the intensity of the materials which are subsequently applied will increase.



Sufficient grinding of border areas is the precondition for a smooth transition between the acrylic teeth and VITA VM LC. Fine-cut tungsten carbide burs are used for grinding.

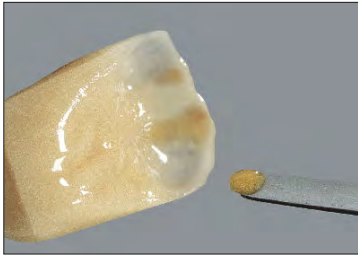


The desired reduction is performed in the cervical area without altering the tooth shape.



The ground surface is cleaned carefully and wetted with VITA VM LC MODELLING LIQUID.

MODELLING LIQUID is a hazardous material.
See information on page 35.



Depending on which type of individualization is to be achieved, the suitable shade is applied: Ten different VITA VM LC PAINT materials are available for this purpose. For fixation of the materials, intermediate polymerization must be carried out.

⚠ Note: VITAVM LC PAINT and WINDOW materials must not be on the surface and must be completely coated with dentine or enamel materials. When applying the materials, air inclusions must be avoided.



To ensure perfect application, a thin layer of VITA VM LC WINDOW is applied. The tooth is built up with ENAMEL, EFFECT ENAMEL or NEUTRAL materials - respectively BASE DENTINE, CHROMA PLUS or EFFECT LINER materials in the cervical area - and polymerized.

Observe polymerization times and information on pages 28-29!



After final polymerization, the restoration is finished with suitable abrasive tools and polished.



The completed restoration

VITAPAN teeth can be characterized in accordance with the processing method described above.

⚠ Note: The VM LC TEETH INDIVIDUALIZATION KIT and the VITA VM LC PAINT KIT are available for individualizing and characterizing VITA acrylic teeth and VITA CAD-Temp.

The light curing unit must be equipped with a light source which has a wavelength of 350 - 500 nm and a maximum intensity of 470 nm.

Please adhere to the instructions for use of the different light curing units.

Company Unit	Polymerization VITAVM LC OPAQUE	Intermediate polymerization up to max. 1.5 mm (fixation)	Pontics up to max. 2 mm	Final polymerization	Comments
Degu Dent/Dentsply					
2 in 1/Cristobal +	CURE (F1)	3 x program CURE (F2)	3 x program CURE (F2)	3 x program CURE (F2)	
Triad 2000	2 min. (rotating plate situated at approx. 3 cm above the floor of the unit)	6 min. (rotating plate situated on the floor of the unit)	10 min. (rotating plate situated on the floor of the unit)	10 min. (rotating plate situated on the floor of the unit)	Halogen lamp 275 Watts
Espe					
Visio Alfa / Visio Beta	OPAQUE A1-D3, OM1-5M3: 1 x 7 min. per layer, incl. 10 sec. vacuum (program U1) COLOR & GINGIVA OPAQUE: 2 x 7 min. per layer, incl. 10 sec. vacuum (program U1)	several intervals with Visio Alfa or fixation with Visio Alfa, then with Visio Beta 15 min. with vacuum	Fixation with Visio Alfa, then with Visio Beta 15 min. incl. vacuum (program 0) or with Visio Beta 2 x 7 min. without vacuum (program U3)	Fixation with Visio Alfa, then with Visio Beta 15 min. incl. vacuum (program 0) or with Visio Beta 2 x 7 min. without vacuum (program U3)	OPAQUE: Please observe the longer polymerization times for COLOR & GINGIVA OPAQUE. To avoid the formation of bubbles, the opaque must be applied thinly. Pastes (BD, EN, WIN etc): Program 0 may only be used after previous fixation with Visio Alpha; if previous fixation is omitted, program U3 must be selected twice.
Hager & Werken					
Speed-Labolight	5 min.	5 min.	10 min.	10 min.	The object must be placed in the center of the chamber. The object must not be placed on the floor! Lamps: 8 x Osram Dulux S 9W/71 1 x halogen Osram HLX 15V/150W
Heraeus Kulzer					
Dentacolor XS	180 sec.	90 sec.	2 x 180 sec.	2 x 180 sec.	The object must be placed in the center of the chamber. The object must not be placed on the floor!
UniXS	2 x 180 sec.	90 sec.	2 x 180 sec.	2 x 180 sec.	
Heraflash	2 x 180 sec.	90 sec.	3 x 180 sec.	3 x 180 sec.	The object must be placed in the center of the chamber. The object must not be placed on the floor!
HiLite	2 x 180 sec.	90 sec.	3 x 180 sec.	3 x 180 sec.	

Company Unit	Polymerization VITAVM LC OPAQUE	Intermediate polymerization up to max. 1.5 mm (fixation)	Pontics up to max 2 mm	Final polymerization	Comments
Ivoclar Vivadent					
Lumamat 100	VB = 0 VG = 2:00 min. Heating level 1	VB = 0 VG = 4:30 min. Heating level 1	VB = 0 VG = 7 min. Heating level 3	VB = 0 VG = 7 min. Heating level 3	Times and heating levels must be programmed by the user! VB = Precuring VG = Tempering
Schütz Dental					
Spectra LED	10 min.	10 min.	15 min.	15 min.	The object must be placed in the center of the chamber. The object must not be placed on the floor!
Shofu Dental					
Solidilite EX	10 min.	10 min.	15 min.	15 min.	The object must be placed in the center of the chamber. The object must not be placed on the floor!
Solidilite V	5 min.	10 min.	15 min.	15 min.	The object must be placed in the cone of light in the center of the chamber.

Polymerization information

The values given on pages 28-29 are exclusively based on correctly functioning equipment. When using light-curing resins, the polymerization result mainly depends on the power of the unit in use (see page 9 "Facts worth knowing about light-curing").

Our application-technical recommendations for polymerizing (regardless 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 polymerization result does not correspond to the result that is achieved under perfect conditions, the polymerization unit must be checked with regard to the lamp function, operating hours and the degree of contamination. The maintenance instructions of the manufacturer must be observed.





Information on polymerization:





































- Intermediate polymerization can be carried out any time during layering.
- If a layer thickness of 2 mm is reached during layering, final polymerization must be carried out.
- If the dispersive layer is retained, layering can be continued immediately after polymerizing.
- For complete curing of multi-unit constructions, additional polymerization of the interdental spaces is required. The object must be aligned accordingly.

The classification tables are only intended to provide reference values

VITA SYSTEM 3D-MASTER	OPAQUE	EFFECT LINER	CHROMA PLUS	ENAMEL
0M1	OP 0M1	EL2	–	ENL
0M3	OP 0M3	EL2	–	ENL
1M1	OP 1M1	EL2	CP1	ENL
1M2	OP 1M2	EL4	CP1	ENL
2L1.5	OP 2L1.5	EL6	CP2	ENL
2L2.5	OP 2L2.5	EL4	CP2	ENL
2M1	OP 2M1	EL2	CP2	ENL
2M2	OP 2M2	EL4	CP2	ENL
2M3	OP 2M3	EL4	CP2	ENL
2R1.5	OP 2R1.5	EL2	CP2	ENL
2R2.5	OP 2R2.5	EL4	CP2	ENL
3L1.5	OP 3L1.5	EL6	CP2	ENL
3L2.5	OP 3L2.5	EL4	CP3	ENL
3M1	OP 3M1	EL6	CP2	ENL
3M2	OP 3M2	EL3	CP3	ENL
3M3	OP 3M3	EL3	CP3	ENL
3R1.5	OP 3R1.5	EL6	CP2	ENL
3R2.5	OP 3R2.5	EL3	CP3	ENL
4L1.5	OP 4L1.5	EL3	CP5	END
4L2.5	OP 4L2.5	EL3	CP3	END
4M1	OP 4M1	EL3	CP5	END
4M2	OP 4M2	EL3	CP5	END
4M3	OP 4M3	EL3	CP4	END
4R1.5	OP 4R1.5	EL3	CP5	END
4R2.5	OP 4R2.5	EL3	CP4	END
5M1	OP 5M1	EL3	CP5	END
5M2	OP 5M2	EL3	CP5	END
5M3	OP 5M3	EL3	CP5	END
VITA classical A – D	OPAQUE	EFFECT LINER	CHROMA PLUS	ENAMEL
A1	OP A1	EL2	CP1	ENL
A2	OP A2	EL3	CP4	ENL
A3	OP A3	EL3	CP4	ENL
A3,5	OP A3,5	EL3	CP4	END
B3	OP B3	EL3	CP4	END
D3	OP D3	EL3	CP4	END

The EFFECT Liner and CHROMA PLUS materials can also be mixed with each other. When mixing them, make sure to avoid the formation of bubbles.

VITAVM[®]LC COLOR OPAQUE – shade-intensive opaque materials for characterization, especially in case of thin walls		C01	gold	orange	
		C02	brown	brown	
		C03	lilac	purple	

VITAVM[®]LC CHROMA PLUS – materials with very intensive shades – when applied thinly, they enhance the shade in the neck area		CP1	ivory	ivory	CP1 CHROMA PLUS VITAVM- [®] LC 
		CP2	almond	beige	
		CP3	moccasin	light orange-brown	
		CP4	caramel	orange	
		CP5	burlywood	green-brown	
VITAVM[®]LC EFFECT LINER – universally suitable to support and intensify the basic shade		EL2	cream	beige	EL2 EFFECT LINER VITAVM- [®] LC 
		EL3	tabac	brown	
		EL4	golden fleece	yellow	
		EL5	papaya	orange	
		EL6	sesame	green-yellow	
VITAVM[®]LC EFFECT ENAMEL – can be used for all enamel areas of the natural tooth – universally suitable enamel effect materials – to achieve a natural effect of depth		EE3	misty rose	pink-translucent*	EE3 EFFECT ENAMEL VITAVM- [®] LC 
		EE6	navajo	reddish-translucent**	
		EE9	water drop	bluish-translucent***	
			* for discoloration in the cervical and/or enamel area ** for discoloration, especially in older teeth *** for subcoating in the enamel area for bluish incisal areas		
VITAVM[®]LC PAINT – for shade effects and individual characteristics such as calcification, enamel cracks and smoke stains – VITA VM LC PAINT materials must not be on the surface due to the low filler content		PT1	birch	white	PT1 PAINT VITAVM- [®] LC 
		PT3	sun kiss	yellow	
		PT5	gold earth	light orange-brown	
		PT8	almond	almond-colored	
		PT9	burnt clay	green-brown	
		PT12	redwood	bordeaux	
		PT13	shak	grey	
		PT15	brown stone	chestnut brown	
		PT17	niagara	blue	
		PT19	fumo 2	light brown	
VITAVM[®]LC GINGIVA OPAQUE – for coating the metal framework prior to the application of the GINGIVA materials		GOL	light flesh	light pink	GOL GINGIVA OPAQUE VITAVM- [®] LC 
VITAVM[®]LC GINGIVA – to restore the original gingival situation – color nuances range from dusky pink to orange-red to dark red		G1	rose	dusky pink	G1 GINGIVA VITAVM- [®] LC 
		G2	nectarine	orange-pink	
		G4	rosewood	brown-red	
		G5	cherry brown	dark red	
VITAVM[®]LC WINDOW – to vary the intensity of the shade of the PAINT materials		WIN	transparent		WIN WINDOW VITAVM- [®] LC 



VITAVM®LC BASIC KIT*		
Basic kit for BASIC layering		
Quantity	Content	Material
26	10 g	OPAQUE 1M1–5M3
26	4 g	BASE DENTINE 1M1–5M3
2	4 g	ENAMEL ENL, END
1	4 g	NEUTRAL NT
1	2 g	WINDOW WIN
3	4 g	CHROMA PLUS CP1-CP5
3	5 ml	OPAQUE LIQUID
1	10 ml	SOLVENT for VITAVM BOND/LC OPAQUE
1	30 ml	MODELLING LIQUID
1	30 ml	SEPARATOR
1	–	Mixing plate, black
1	–	Brush, No. E O
1	–	Measuring spoon
1	–	Mixing spatula
1	–	VITA VM shade indicator "individual"
1	–	VITA Toothguide 3D-MASTER
	–	Working instructions

* also available with reduced range of shades as BASIC KIT SMALL in the following shades: 1M1, 2M1, 2M2, 2M3, 3L1.5, 3L2.5, 3M1, 3M2, 3M3, 3R1.5, 3R2.5, 4M1, 4M2, 4M3, 5M2
 also available as reduced VITA VM LC BASIC KIT SMALL classical in the following shades: A1, A2, A3, A3.5, B3, D3



VITAVM®LC PROFESSIONAL KIT		
For natural effects and characteristics		
Quantity	Content	Material
3	10 g	COLOR OPAQUE CO1-CO3
2	4 g	EFFECT LINER EL2-EL6
3	4 g	EFFECT ENAMEL EE3, EE6, EE9
1	–	VITA VM shade indicator "individual"



VITAVM®LC PAINT KIT		
Shade-intensive materials		
Quantity	Content	Material
10	2 g	PAINT PT 1–19
1	2 g	WINDOW WIN
1	–	VITA VM shade indicator "individual"



VITAVM [®] LC GINGIVA KIT		
Gingiva materials with natural effects		
Quantity	Content	Material
4	4 g	GINGIVA G1, G2, G4, G5
1	10 g	GINGIVA OPAQUE GOL
1	–	VITA VM shade indicator "individual"
1	–	Working instructions



VITAVM [®] LC TEETH INDIVIDUALIZATION KIT		
For individualizing acrylic teeth		
Quantity	Content	Material
10	2 g	PAINT PT1–19
1	2 g	WINDOW WIN
3	4 g	EFFECT ENAMEL EE3, EE6, EE9
1	4 g	NEUTRAL NT
2	4 g	ENAMEL ENL, END
1	30 ml	MODELLING LIQUID
1	–	Brush holder
1	pack	Disposable brush tips, 50 pcs.
1	–	Working instructions



VITAVM [®] LC BLEACHED COLOR KIT		
Ultra-bright shades for the reproduction of bleached teeth		
Quantity	Content	Material
2	10 g	OPAQUE OM1, OM3
2	4 g	BASE DENTINE OM1, OM3
1	4 g	ENAMEL ENL
1	4 g	NEUTRAL NT
1	2 g	WINDOW WIN
1	5 ml	OPAQUE LIQUID
1	10 ml	SOLVENT for VITA VM BOND/LC OPAQUE
1	30 ml	MODELLING LIQUID
1	30 ml	SEPARATOR
1 each	–	Brush, measuring spoon, mixing spatula
1	–	BLEACHED SHADE GUIDE SHADE GROUP OM
1	–	Working instructions








VITAVM®LC BLEACHED COLOR ADD-ON KIT		
Add-on kit for the BASIC KIT/BASIC KIT SMALL		
Quantity	Content	Material
2	10g	OPAQUE 0M1, 0M3
2	4g	BASE DENTINE 0M1, 0M3
1	4g	ENAMEL ENL
1	–	BLEACHED SHADE GUIDE SHADE GROUP 0M




VITAVM®LC INLAY/VENEER KIT		
For metal-free restorations		
Quantity	Content	Material
6	4g	BASE DENTINE 1M2, 2M2, 3M3, 2L1.5, 3R2.5, 3L2.5
1	4g	ENAMEL ENL
1	10 ml	MODELLING LIQUID
1	30 ml	SEPARATOR
6	–	Shade tabs
1	–	Working instructions


* also available as INLAY/VENEER KIT classical in the shades A1, A2, A3, A3.5, B3, D3

VITAVM®LC Hazard information

The following products require hazard identification:		
VITAVM®BOND LIQUID for VITAVM®LC (contains ethylene glycol dimethacrylate)	Irritant Irritates the respiratory organs. May cause sensitization by skin contact.	
VITAVM®LC MODELLING LIQUID	Irritant Irritates the eyes, respiratory organs and the skin.	
VITAVM®LC SEPARATOR (contains cyclohexane, toluene)	Injurious to health / highly flammable / dangerous for the environment Irritates the skin. Injurious to health: risk of serious damage to health if inhaled over an extended period. Possible risk of harm to the unborn child. Injurious to health: May cause lung damage if swallowed. Vapors may cause drowsiness and dizziness. Very toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.	  
VITAVM®SOLVENT for VITAVM®BOND/ VITAVM®LC OPAQUE (contains methyl methacrylate) VITAVM®LC OPAQUE LIQUID (contains methyl methacrylate, ethylene glycol dimethacrylate, 2-dimethylaminoethyl methacrylate)	Irritant / highly flammable Irritates the respiratory organs and the skin. May cause sensitization by skin contact.	 
VITAVM®LC BASE DENTINE, ENAMEL, EFFECT ENAMEL, NEUTRAL, GINGIVA (contains 2-dimethylaminoethyl methacrylate)	Irritant Irritates the eyes and the respiratory organs. Classification according to GHS Causes skin irritation Causes severe eye irritation May cause allergic reactions.	  Caution!
VITAVM®LC PAINT (contains 2-dimethylaminoethyl methacrylate)	Irritant Irritates the eyes and the respiratory organs Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Classification according to GHS Causes skin irritation Causes severe eye irritation May cause allergic reactions Harmful to aquatic organisms with long-term adverse effects.	  Caution!

<p>VITAVM[®]LC CHROMA PLUS, EFFECT LINER (contains 2-dimethylaminoethyl methacrylate)</p>	<p>Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</p> <p>Classification according to GHS May cause allergic reactions Harmful to aquatic organisms with long-term adverse effects.</p>	
<p>VITAVM[®]LC WINDOW (contains 2-dimethylaminoethyl methacrylate)</p>	<p>Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</p> <p>Classification according to GHS Causes skin irritation Causes severe eye irritation May cause allergic reactions</p> <p>Harmful to aquatic organisms with long-term adverse effects.</p>	 Caution!

Disposal: Proper disposal must be ensured. Disposal in accordance with the regulations of the authorities. Please refer to the safety data sheet for detailed information!

<p>Safety at work, health protection</p>	<p>Wear suitable protective goggles/face mask, protective gloves and protective clothing when working. Work under an extraction unit.</p>	
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Storage information

Do not store above 25°C.

Do not expose to direct sunlight.

To ensure perfect storage of the materials, they should be stored in the firmly sealed container/bottle in the refrigerator at 5-7°C. To ensure proper consistency for processing of the materials, they should be left at room temperature for about one hour before the use. Containers (bottles) should only be opened immediately before the use!

Explanation of the markings on the packaging

LOT Symbol for "lot number"



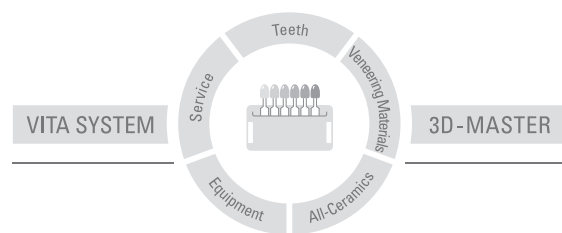
Symbol for "can be used until"



Note! Read accompanying documents.

VITA VM LC is available in VITA SYSTEM 3D-MASTER and VITA classical A–D shades. Shade compatibility with all VITA 3D-MASTER and VITA classical A–D materials is ensured.

With the unique VITA SYSTEM 3D-MASTER all natural tooth shades are systematically determined and completely reproduced.



Please note: Our products should be used according to the working instructions. We cannot be held liable for damages 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 porcelains and equipment from other manufacturers which are not compatible or not authorized for use with our product. Furthermore, our liability for the correctness of this information is independent of the legal ground and, in as far as legally permissible, is limited to the invoiced value of the goods supplied excluding turnover tax. In particular, as far as legally permissible, we do not assume any liability for profit loss, for indirect damages, for consequential damages or for claims of third parties against the purchaser. Claims for damages based on fault liability (culpa in contrahendo, breach of contract, unlawful acts, etc.) can only be made in the case of intent or gross negligence. The VITA Modulbox is not necessarily a component of the product. Date of issue of these working instructions: 01.11

After the publication of these working instructions any previous versions become obsolete. The current version can be found at www.vita-zahnfabrik.com

VITA Zahnfabrik is certified according to the Medical Device Directive and the following products bear the CE mark:  0124

VITAVM[®]LC · **VITAVM[®]BOND for VITAVM[®]LC**
VITA CAD-Temp[®] for CEREC/inlab · **VITAPAN** · **VITA PHYSIODENS**

US 5498157 A · AU 659964 B2 · EP 0591958 B1

VITA

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