

# VITAVM<sup>®</sup>LC

## Working Instructions



VITA shade taking

VITA shade communication

VITA shade reproduction

VITA shade control

Date of issue: 03.13

VITA shade, VITA made.

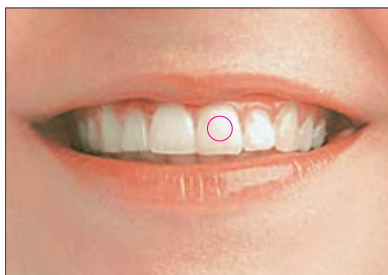
**VITA**

Light-curing microparticle composite for fixed and removable restorations for extraoral use. Available in VITA SYSTEM 3D-MASTER and VITA classical A1–D4 shades.

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## 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 ShadeAssist 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.



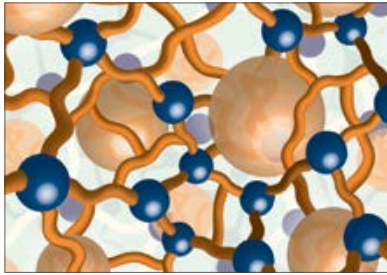
## VITA shade reproduction




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

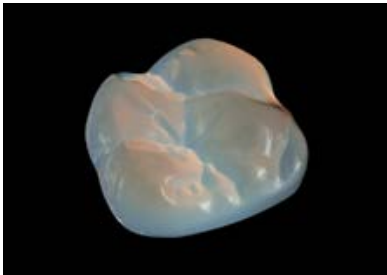
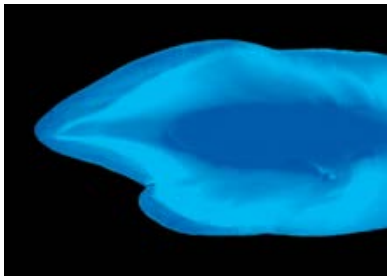
In the last step, qualitative shade evaluation is no longer to be left to the subjective opinion of an individual. Within the VITA process, objective control of the final restoration is the most important prerequisite for ensuring satisfied patients and avoiding additional work. When using VITA VM LC,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



-  Prepolymer, swollen by monomer and integrated into the network
-  cross-linked monomer
-  Inorganic microparticle filler surface functionalized, integrated into polymer network



Barely distinguishable:  
tooth 11 VITA VM LC, 21 - 22 VITA VM 13



## Excellent material

VITA VM LC combines superior physical properties and simple handling with natural appearance. The fine-particle inorganic filler material with a primary particle size of just a few nanometers exhibits particularly homogeneous distribution in VITA VM LC. Accordingly, undesired scattering of light is minimized and utmost brilliance and translucency in accordance with natural teeth are ensured.

Thanks to a refining process, the inorganic filler is surface functionalized and is an active element in the polymerization process. Firmly integrated into the network structure, it guarantees the desired material strength and allows to achieve perfect surface quality. The additional use of a special prepolymer ensures outstanding processing characteristics, a highly cross-linked matrix and hence reduced material shrinkage.

## Superb esthetics

Thanks to excellent light-optical properties, a restoration made from VITA VM LC can hardly be distinguished from a ceramic veneer.

## Natural esthetics

The objective of any esthetic dental restoration is the reproduction of the fluorescence and opalescence of natural teeth. Like all VITA VM materials, VITA VM LC excels in its refraction and reflection behavior which can be compared to that of enamel.

The picture taken under UV light clearly shows that different levels of fluorescence are found in natural teeth. Numerous VITA VM LC materials contain pigments which add excellent fluorescence to the restorations.

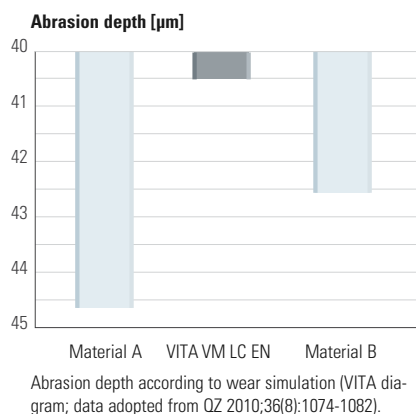
The fine-particle inorganic filler is responsible for the opalescent effect of VITA VM LC. This is particularly apparent in the incisal materials.

## 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 characteristics for quick results
- excellent shade stability and low plaque affinity
- wide indication range
- outstanding esthetic results and economical in terms of work input
- reliable shade reproduction even in cases of limited space
- accurate shade-taking and shade reproduction in the VITA SYSTEM 3D-MASTER and for VITA classical shades



### Abrasion resistance

A current abrasion simulation study\* of resin veneering materials shows that VITA VM LC Enamel features higher abrasion resistance in the comparison with competitors' products.

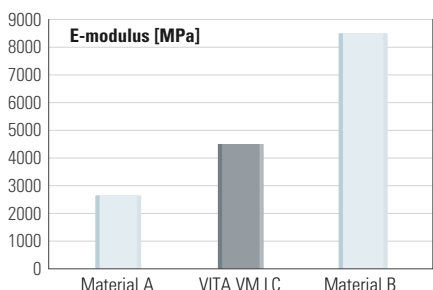
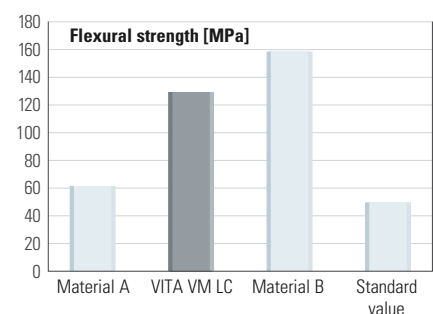
\*Quintessenz Zahntechnik 2010;36(8):1074-1082

### Shade stability and low plaque affinity

Due to its firmly integrated fine-particle filler, VITA VM LC is very homogeneous and easy to polish. VITA VM LC exhibits unsurpassed shade stability and low plaque affinity thanks to high surface density, limited water absorption and low surface roughness.

### 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) 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 <sup>®</sup> LC – Physical properties	Value
Flexural strength	approx. 120 MPa
E-modulus	approx. 4000 MPa
Deflection	approx. 1.10 mm
Impact strength	approx. 4.6 KJ/m <sup>2</sup>
Inorganic filler content	45–48 wt.-%


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.

The Alloy Primer from Kuraray has been tested and approved by us for optimum bonding between metal and composite.

### **Indication:**

- Full and partial veneering of metal frameworks: crowns, bridges, telescopic crowns, implant suprastructures
- Veneering of acrylic resin frameworks
- Layering-over long-term temporaries made from VITA CAD-Temp
- Individualization of VITA acrylic teeth
- Metal-free crowns and three-unit anterior bridges as long-term temporary restorations
- Veneering of frameworks made from polyether ketone (PEEK) with a ceramic filler content of up to 20 %, such as Bio HPP (bredent), as long-term temporary restorations
- Veneering of partially yttrium stabilized ZrO<sub>2</sub> frameworks (CTE approx.  $10.5 \cdot 10^{-6} \cdot K^{-1}$ ), such as VITA In-Ceram YZ as long-term temporary restorations
- Inlays
- Veneers

 **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**

- Occlusal dysfunctions or parafunctions, such as 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. As a result, 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. 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 nm. There are various light sources which can be used for this purpose: e.g. fluorescent lamps, xenon flashlight bulbs and 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. Temperatures above 120 °C must be avoided.

### 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.

Photo 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: completely polymerized, hardly any discoloration  
to the right: polymerized too shortly, strong discolorations



Generally, microretentions increase the bond strength. Their use is urgently recommended for high-gold content alloys. The information provided by the manufacturer of the bonding system must always be observed. When veneering electroplated secondary elements, microretentions or undercuts must be attached to the tertiary structures or suprastructures.



The framework is prepared with cross-cut tungsten carbide burs according to the instructions of the alloy manufacturer. Surfaces not to be veneered, in particular occlusal surfaces, 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.



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

The bonding system, for example Alloy Primer, Kuraray, is applied after cleaning. The procedure is based on the current version of the manufacturer's processing instructions. PRE OPAQUE or OPAQUE /OPAQUE PASTE are applied immediately after cleaning.



**Contact with water and moisture must be avoided!**

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



The **Alloy Primer** from **Kuraray** has been tested and approved by VITA for optimum bonding between metal and composite.

### **Note on the use of other bonding systems**

The following bonding systems are also suitable:

- Heraeus Kulzer Signum Metal Bond I + II
- GC Metalprimer II
- Shofu Primer
- 3M Espe Rocatec mit Espesil

The materials/systems are processed in accordance with the current version of the manufacturer's instructions for use. VITA VM LC can be processed with bonding systems which condition the framework material for subsequent application of a light curing opaque based on methyl methacrylate.

In all cases, however, the suitability for processing with VITA VM LC must be checked before using bonding systems of other manufacturers. This applies also to the bonding systems listed above. VITA Zahnfabrik does not assume any liability for 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.

VITA VM BOND is **not** a suitable bonding system for the new VITA VM LC OPAQUE PASTE and is therefore no longer available.

### **Recommended procedure for the use of Alloy Primer, Kuraray**

Sandblast metal framework with aluminium oxide as described. Use only dry compressed air (with water separator) or a clean brush for cleaning the framework. Skin contact and contact with moisture (for example steam) must be avoided. Use a little sponge or a brush to apply Alloy Primer and allow to dry for at least 1 minute. The information included in the current version of the manufacturer's instructions for use must be observed. Then VITA VM LC PRE OPAQUE or OPAQUE PASTE / OPAQUE are applied.



If polymerization and layering are to be carried out on the model, the plaster needs to be separated with VITA VM LC SEPARATOR.

VITA VM LC SEPARATOR is a hazardous material. Observe information on pages 34-35.



PRE OPAQUE is a flowable additional component which increases the bond strength of metal frameworks with and without retentions. Thanks to its translucency, it hardens independent of the layer thickness even in dark zones with a small amount of light. Therefore the use of PRE OPAQUE is particularly recommended for retentions. The material allows also to obtain a uniform opaque layer.

PRE OPAQUE is applied immediately after the application of the bonding system.

Add the required quantity of PRE OPAQUE onto a ceramic mixing plate.

PRE OPAQUE is a hazardous material. Observe information on pages 34-35.



PRE OPAQUE is applied onto the framework with a disposable brush. A thin layer is sufficient to fill undercuts adequately. Polymerize subsequently.

**Observe polymerization times and information on pages 26-27!**

**⚠ Note:** Do not remove the dispersion layer to achieve perfect bonding of PRE OPAQUE and the opaque material. Avoid skin contact and moisture.

To ensure a perfect result, either OPAQUE or OPAQUE PASTE must be applied immediately after polymerizing PRE OPAQUE. Both opaque materials have a layer thickness of approx. 0.2 mm each after polymerizing.



VITA VM LC CLEANER is a **cleaning liquid** to remove non-polymerized VM LC materials from instruments. Hardened material residues can be partially dissolved with VM LC OPAQUE LIQUID.

VITA VM LC CLEANER is a hazardous material. Observe information on pages 34-35.



### Application of VITAVM<sup>®</sup>LC OPAQUE PASTE

Add the required amount of OPAQUE PASTE into the depression of a black ceramic mixing plate.

**⚠ Note:** Turn back the syringe of the light-sensitive OPAQUE PASTE by one turn after dispensing some material and seal it again immediately.

The consistency of OPAQUE PASTE has been optimally adjusted. OPAQUE LIQUID is exclusively suitable for the use with OPAQUE powder and must not be used together with OPAQUE PASTE.

VITA VM LC OPAQUE PASTE is a hazardous material. Observe information on pages 34-35.



Thin layers of the opaque paste are applied onto the framework using a disposable brush and each layer is polymerized. The first layer is applied in a way to avoid complete coverage – similar to a wash opaque for ceramics.

### Observe polymerization times and information on pages 26-27!

**⚠ Note on the application of OPAQUE PASTE without PRE OPAQUE:** Frameworks that were heated up after polymerization must be cooled down. OPAQUE PASTE may become liquid and come off the retentions.



As many layers of opaque paste are applied (at least 2) as required to ensure complete coverage of the metal. Thanks to its visco-elastic consistency, OPAQUE PASTE exhibits perfect stability at edges and retentions. OPAQUE PASTE on the mixing plate must be protected against light (dark cover) between the individual polymerization steps.

The opaque pastes can be mixed with one another to individualize the shade. Alternatively, PAINT materials can be applied to polymerized OPAQUE PASTE or added once the first layer has been completed.



If non-mixed PAINT materials are applied to OPAQUE PASTE, they are fixed using a hand-held curing light. Then OPAQUE PASTE is cured two times.

Framework completed with VITA VM LC OPAQUE PASTE.

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 PASTE must exhibit a lustrous surface with a thin dispersive layer. 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 a final polymerization process. Then 2-3 thin layers of OPAQUE PASTE are applied and polymerized.



### Application of VITAVM<sup>®</sup>LC OPAQUE

First add the 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 homogeneous, 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. OPAQUE LIQUID is exclusively suitable for the use with OPAQUE powder and must not be used together with OPAQUE PASTE.



VITA VM LC OPAQUE LIQUID is a hazardous material. Observe information on pages 34-35.

**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. COLOR OPAQUE materials can be used to individualize the shade.

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



### Observe polymerization times and information on pages 26-27!

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 powder 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 the material is cured in a final polymerization process. Then 2-3 thin layers of OPAQUE are applied. Afterwards final polymerization is carried out.

VITA VM LC OPAQUE PASTE / OPAQUE

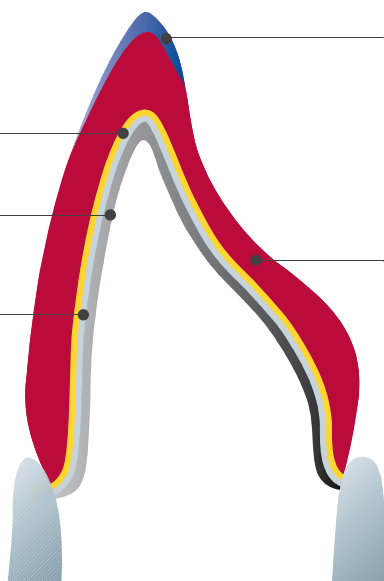


VITA VM LC ENAMEL



metal framework  
prepared with  
bonding system

VITA VM LC PRE OPAQUE

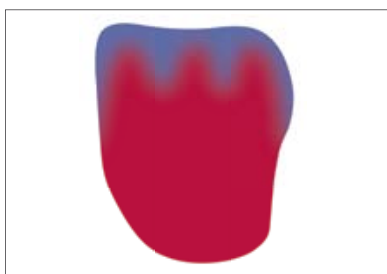


VITA VM LC BASE DENTINE



After applying PRE OPAQUE, OPAQUE / OPAQUE PASTE, VITA VM LC BASIC layering consists of the application of BASE DENTINE and ENAMEL.

The color-bearing BASE DENTINE materials provide 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 life- like 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.

For less translucent results, VM LC EE12 can also be used as an alternative for incisal applications (bleach shades are excluded).

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 VM LC PROFESSIONAL KIT and the VM LC PAINT KIT are available for individualizing and characterizing VITA VM LC.

**Layering in cases of limited space available, see page 16.**



Framework prepared with VITA VM LC OPAQUE or OPAQUE PASTE ready for veneering.

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

VITA VM LC Modelling Liquid is a hazardous material. Observe information on pages 34-35.



## Application of VITAVM<sup>®</sup>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. See also page 16. Classification table on page 28.

**Note:** The VITA VM LC materials (BD, EN, EE, NT, EL, CP, G) are adjusted thixotropically. This 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.



## Application of VITAVM<sup>®</sup>LC ENAMEL

Apply small amount of ENAMEL in the upper third of the veneer surface to complete the crown mould. The classification tables for the ENAMEL materials can be found on page 28.

Then final polymerization is carried out. To facilitate finishing, VITA Oxyprevent gel (Prod. No. FOP3) can be applied, in particular in interdental spaces of bridges, prior to final polymerization. As a result, the inhibition layer is reduced. After final polymerization, VITA Oxyprevent gel is thoroughly removed under running water; finish and polish subsequently.

**Information on polymerization:** Prepolymerization units may be used for the fixation of the materials during layering. If a layer thickness of 2 mm is reached during layering, final polymerization must be carried out. The layering process is continued immediately afterwards.

## Observe polymerization times and information on pages 26-27!



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.

Wet the modelling instrument with VITA VM LC MODELLING LIQUID to facilitate application. Use sparingly! The liquid can also be used for wetting 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 pages 34-35.





### 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 polishing material for veneering composites and a cotton/leather buff or a felt wheel are 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.

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.



### 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 pages 34-35.



Secondary element of a cover denture prepared with VITA VM LC OPAQUE PASTE.



### **Application of EFFECT materials**

Owing to limited space available, a thin layer of EFFECT LINER is applied to the entire veneer surface and fixed to intensify the base shade. Exposed cervical areas or highly chromatic tooth shades require the use of the CHROMA PLUS materials.

Classification tables for EFFECT LINER and CHROMA PLUS, see page 28.



### **Application of 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.



### **Application of VITAVM®LC ENAMEL**

Apply small amount of ENAMEL in the upper third of the veneer surface to complete the crown mould.

The classification tables for the ENAMEL materials can be found on page 28. Then final polymerization is carried out.

**Observe polymerization times and information on pages 26-27.**

Finishing and polishing are carried out according to the BASIC layering, page 15.



Completed veneer, prepared for completion of the cover denture.





Example of an aged tooth with lifelike appearance and effect of depth. This tooth was layered with BASE DENTINE, ENAMEL and individual additional materials.

### VITAVM®LC ENAMEL

For brightening the mesial and distal areas

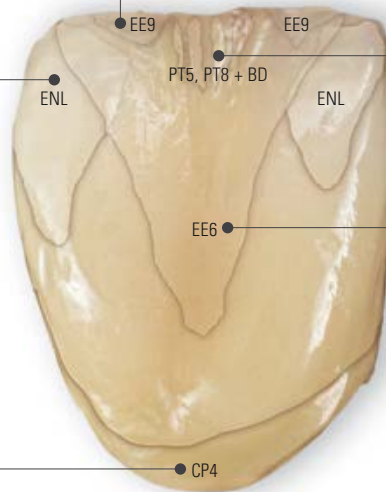
### VITAVM®LC EFFECT ENAMEL

To create a bluish-translucent incisal area

### VITAVM®LC BASE DENTINE

colored with PAINT

To create incisal characteristics and discoloration



### VITAVM®LC CHROMA PLUS

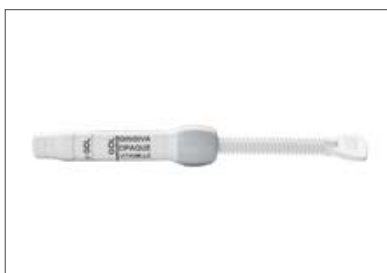
Intensified shade of the cervical area with yellowish effect

### VITAVM®LC EFFECT ENAMEL

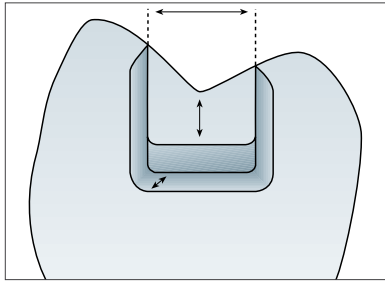
For reddish-translucent discoloration in the central and incisal areas



The VITA VM LC GINGIVA materials were developed especially to restore the original gingival situation. The range of shades of the gingiva materials enables the reproduction of gingiva with a natural appearance for patients from all cultural backgrounds.

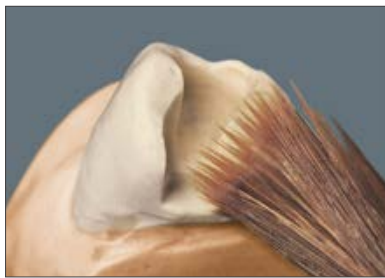


VITA VM LC GINGIVA OPAQUE and GINGIVA OPAQUE PASTE are perfectly suited for covering retentions of partial restorations. Smears are avoided!



### Preparation information

- Box-shaped preparation without sharp edges
- The cavity margins must be entirely in the etchable enamel and outside articulation 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



### Preparation of the model:

Undercuts should be blocked out 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 pages 34-35.



### Layering:

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

### Observe polymerization times and information on pages 26-27!



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 28.

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.

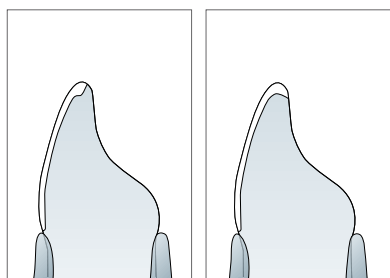


Completed inlay.

### 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

- 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



### Preparation of the model:

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

### Separating:

The die 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 pages 34-35.



### Layering:

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

### Observe polymerization times and information on pages 26-27!



Building up the tooth with ENAMEL materials.

The classification tables for the VITA VM LC ENAMEL materials can be found on page 28.

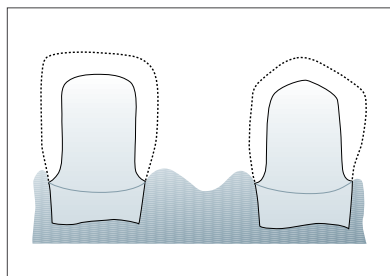
Finishing and polishing should be carried out on a duplicate die. Prior to the integration, all inner surfaces must be sandblasted with 50 – 110 µm aluminium oxide while exerting only little pressure.



Completed veneer.

### Cementing:

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



### Metal-free crowns and three-unit bridges made from VITA VM LC

#### Preparation:

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

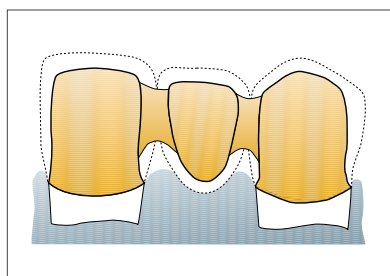
#### Preparation of the model:

Undercuts should be blocked out first.

#### Separating:

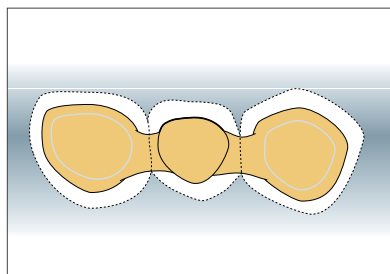
The die is coated with VITA VM LC SEPARATOR beyond the preparation border. The procedure must be repeated at least twice.

VITA VM LC SEPARATOR is a hazardous material. Observe information on pages 34-35.



Use BASE DENTINE to model the copings and the pontic in reduced tooth size. The approximal connections must have a diameter of at least 3.5 mm (10 mm<sup>2</sup>).

#### Observe polymerization times and information on pages 26-27!



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 14).

### Veneering partially yttrium-stabilized ZrO<sub>2</sub> frameworks (CTE approx. $10,5 \cdot 10^{-6} \cdot K^{-1}$ ), such as VITA In-Ceram YZ

Prepare framework for veneering. Please refer to the Working Instructions VITA In-Ceram YZ (No. 1649) for detailed information. Sandblast surfaces to be veneered with Al<sub>2</sub>O<sub>3</sub> (at least 50 µm) and a pressure of <2.5 bar.

Then condition the framework with one of the following bonding systems:

#### – Signum zirconia bond, Heraeus

Apply Signum zirconia bond I and II in accordance with the manufacturer's instructions. Then VITA VM LC PRE OPAQUE or OPAQUE PASTE / OPAQUE are applied (see pages 11/12).

#### – Clearfil Ceramic Primer, Kuraray

Apply Clearfil Ceramic Primer in accordance with the manufacturer's instructions. Then it is mandatory to immediately apply VITA VM LC PRE OPAQUE or VITA VM LC OPAQUE PASTE to achieve adequate bonding. Further layering and completion of the entire veneer according to VITA VM LC BASIC layering (see page 14).

### Veneering substructures made of polyether ketone (PEEK) with a filler content of up to 20%

Fabrication of the framework, for example from BioHPP (bredent), in accordance with the manufacturer's instructions.

Sandblast surfaces to be veneered with 130 µm Al<sub>2</sub>O<sub>3</sub> (pressure: 2.5-3.5 bar).

Then condition the veneer surfaces with visio.link (bredent) according to the manufacturer's instructions.

Then VITA VM LC PRE OPAQUE or OPAQUE PASTE / OPAQUE are applied (see pages 11/12).

Further layering and completion of the entire veneer according to VITA VM LC BASIC layering (see page 14).

To achieve enhanced esthetic appearance, the shade of long-term 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.

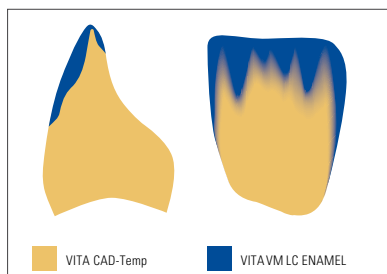
The VITA VM LC CREATIVE KIT is available for layering-over.



When using the cut-back technique, 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 posterior temporary 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. Layering-over 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 pages 34-35.



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 26-27!**

⚠ **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 26-27!**



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 polishing material for veneering composites and a cotton/leather buff are 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.

Residence time in the ultrasonic unit: approx. 1 min.

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 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.



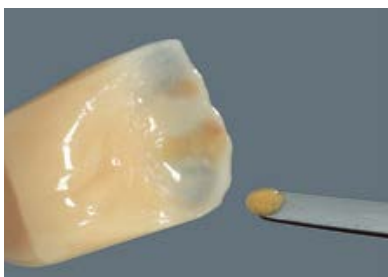
Palatal reduction of the VITA acrylic anterior tooth is required for individualization in the incisal area. In this way the structure of the labial surface is retained – subsequent, time-consuming contouring of a natural surface relief can be omitted. However, it must be kept in mind that if the remaining 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 ground surface is cleaned carefully and wetted with VITA VM LC MODELLING LIQUID.

MODELLING LIQUID is a hazardous material. Observe information on pages 34-35.

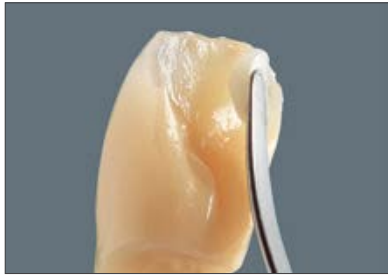


Depending on which type of individualization is to be achieved, the suitable shade is applied: Ten different VITA VM LC PAINT materials are available for this purpose. For fixation of the materials, intermediate polymerization is required.

To ensure perfect application, a thin layer of WINDOW is applied.

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





The tooth is built up with ENAMEL, EFFECT ENAMEL or NEUTRAL materials and polymerized.

**Observe polymerization times and information on pages 26-27!**



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



The completed restoration.

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

Company Unit	Polymerization PRE OPAQUE OPAQUE PASTE	Polymerization OPAQUE powder	Intermediate polymerization up to max. 1.5 mm	Final polymerization and pontics up to max. 2 mm	Comments
<b>Bredent</b>					
<b>Brelux Power Unit</b>	180 sec.	360 sec.	180 sec.	360 sec.	<b>OPAQUE powder:</b> COLOR OPAQUE CO 1-3 and GINGIVA OPAQUE must be polymerized 2 x 360 sec.
<b>DeguDent/Dentsply</b>					
<b>Triad 2000</b>	4 min. (rotating plate situated on the floor of the unit) Use of PRE OPAQUE is recommended.	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)	Halogen lamp 275 watts
<b>Espe</b>					
<b>Visio Beta</b>	7 min. (program U3)	<b>OPAQUE A1-D3, OM1-5M3:</b> <b>1 x 7 min.</b> per layer, incl. 10 sec. vacuum (program U1)  <b>COLOR &amp; GINGIVA OPAQUE:</b> <b>2 x 7 min.</b> per layer, incl. 10 sec. vacuum (program U1)	2 x 7 min. (program U3)	2 x 7 min. (program U3)	<b>OPAQUE powder:</b> Please observe the longer polymerization times for COLOR & GINGIVA OPAQUE. To avoid the formation of bubbles, the opaque must be applied thinly.
<b>Hager &amp; Werken</b>					
<b>Speed Labolight</b>	3 min.	5 min.	5 min.	10 min.	Object must be placed in the center of the chamber. The object must not be placed on the floor! <b>Lamps:</b> 8 x Osram Dulux S 9W/71 1 x Halogen Osram HLX 15 V/150 W
<b>Heraeus Kulzer</b>					
<b>Dentacolor XS</b>	90 sec.	180 sec.	90 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!
<b>UniXS</b>	90 sec.	2 x 180 sec.	90 sec.	2 x 180 sec.	
<b>Heraflash</b>	90 sec.	2 x 180 sec.	90 sec.	3 x 180 sec.	
<b>HiLite Power</b>	90 sec.	2 x 180 sec.	90 sec.	3 x 180 sec.	

Company Unit	Polymerization PRE OPAQUE OPAQUE PASTE	Polymerization OPAQUE powder	Intermediate polymerization up to max. 1.5 mm	Final polymeriz- ation and pontics up to max. 2 mm	Comments
Ivoclar Vivadent					
Lumamat 100	Heating level 0 VB = 0 VG = 3:00 min. (BP = 3:00 min.)	Heating level 1 VB = 0 VG = 2:00 min. (BP = 3:40 min.)	Heating level 1 VB = 0 VG = 4:30 min. (BP = 6:10 min.)	Heating level 3 VB = 0 VG = 7:00 min. (BP = 10:10 min.)	<b>Times and heating levels must be programmed by the user!</b>  VB = Precuring VG = Tempering BP = Resulting curing time
Schütz Dental					
Spectra LED	3 min.	10 min.	10 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	3 min.	10 min.	10 min.	15 min.	The object must be placed in the cone of light in the center of the chamber! The object must not be placed on the floor.
Solidilite V	3 min.	5 min.	10 min.	15 min.	
Sirio Dental					
SR 620 Sibari	3 min.	5 min.	5 min.	10 min.	Object must be placed in the cone of light in the center of the rotating plate! Veneer surfaces must face outwards.

### Polymerization information

The values given on pages 26-27 are exclusively based on correctly functioning equipment. When using light-curing composites, the polymerization result mainly depends on the power of the unit in use (see page 7 "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 manufacturers' maintenance instructions must be observed.

### Information on polymerization:

- For **fixation** of the materials during layering, additional prepolymerization units may be used.
- **Intermediate polymerization** can be carried out at any time during layering. However, it is only mandatory if grinding is to be performed 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 restorations, additional polymerization of the approximal spaces (dark zones) is required.
- The object must be aligned accordingly.
- To facilitate finishing, VITA Oxyprevent gel (Prod. No. FOP3) can be applied, in particular in approximal spaces of bridges, prior to final polymerization. As a result, the inhibition layer is reduced. After final polymerization, VITA Oxyprevent gel is thoroughly removed under running water; finish and polish subsequently.

## VITAVM<sup>®</sup>LC Classification tables and additional materials





The classification tables are only intended to provide reference values.






































VITA SYSTEM 3D-MASTER	OPAQUE	OPAQUE PASTE	EFFECT LINER	CHROMA PLUS	ENAMEL
0M1	OP 0M1	—	EL2	—	ENL
1M1	OP 1M1	OP 1M1	EL2	CP1	ENL
1M2	OP 1M2	OP 1M2	EL4	CP1	ENL
2L1.5	OP 2L1.5	OP 2L1.5	EL6	CP2	ENL
2L2.5	OP 2L2.5	—	EL4	CP2	ENL
2M1	OP 2M1	OP 2M1	EL2	CP2	ENL
2M2	OP 2M2	OP 2M2	EL4	CP2	ENL
2M3	OP 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	OP 3L1.5	EL6	CP2	ENL
3L2.5	OP 3L2.5	—	EL4	CP3	ENL
3M1	OP 3M1	—	EL6	CP2	ENL
3M2	OP 3M2	OP 3M2	EL3	CP3	ENL
3M3	OP 3M3	OP 3M3	EL3	CP3	ENL
3R1.5	OP 3R1.5	—	EL6	CP2	ENL
3R2.5	OP 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	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

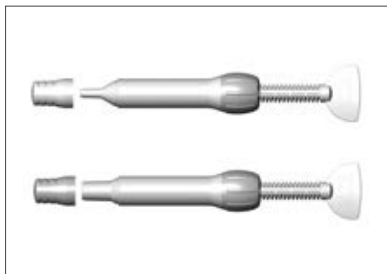
VITA classical A1–D4 shades	Opaque paste	Opaque paste	EFFECT LINER	CHROMA PLUS	ENAMEL
A1	OP A1	OP A1	—	CP1	ENL
A2	OP A2	OP A2	EL3	CP4	ENL
A3	OP A3	OP A3	EL3	CP4	ENL
A3.5	OP A3.5	OP A3.5	EL3	CP4	END
A4	—	OP A4	EL3	—	END
B2	—	OP B2	EL6	CP2	ENL
B3	OP B3	OP B3	EL4	CP3	END
B4	—	OP B4	EL3	CP3	END
C1	—	OP C1	EL6	CP5	END
C2	—	OP C2	EL6	CP5	ENL
C3	—	OP C3	EL6	CP5	END
C4	—	OP C4	EL3	CP5	END
D2	—	OP D2	EL3	CP2	END
D3	OP D3	OP D3	EL3	—	END
D4	—	OP D4	EL3	CP2	END

The EFFECT Liner and CHROMA PLUS materials can also be mixed with each other.

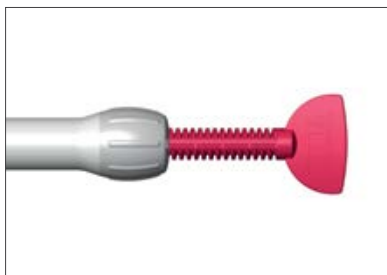
When mixing them, make sure to avoid the formation of bubbles.

<b>VITAVM<sup>®</sup>LC COLOR OPAQUE</b> – shade-intensive opaque powder materials for characterization, especially in case of thin walls – not suitable for the use with OPAQUE PASTE		C01	gold	orange	 <b>COLOR OPAQUE</b> VITAVM <sup>®</sup> LC
		C02	brown	brown	
		C03	lilac	lilac	

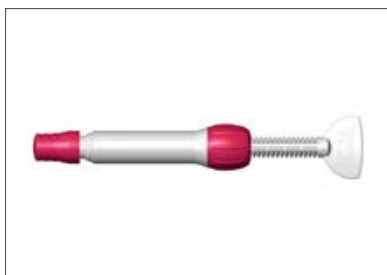
<b>VITAVM®LC CHROMA PLUS</b> – materials with very intensive shades – when applied thinly, they enhance the shade in the neck area – shades perfectly matched with 3D-MASTER shades		CP1	ivory	ivory	<b>CP1</b> <b>CHROMA PLUS</b> VITAVM®LC 
		CP2	almond	beige	
		CP3	moccasin	light orange-brown	
		CP4	caramel	orange	
		CP5	burlywood	green-brown	
<b>VITAVM®LC EFFECT LINER</b> – universally suitable to support and intensify the base shade – can be used in the cervical and dentine areas		EL2	cream	beige	<b>EL2</b> <b>EFFECT LINER</b> VITAVM®LC 
		EL3	tabac	brown	
		EL4	golden fleece	yellow	
		EL5	papaya	orange	
		EL6	sesame	green-yellow	
<b>VITAVM®LC EFFECT ENAMEL</b> – can be used for all enamel areas of the natural tooth – universally suitable translucent enamel effect material – to achieve a natural effect of depth		EE2	pastel	pastel	<b>EE3</b> <b>EFFECT ENAMEL</b> VITAVM®LC 
		EE3	misty rose	pink-translucent*	
		EE6	navajo	reddish translucent**	
		EE9	water drop	bluish translucent***	
		EE12	warm gray	greyish-beige  * 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	
<b>VITAVM®LC PAINT</b> – low viscosity materials for shade effects and individual characteristics, such as calcifications, enamel cracks and smoke stains – VITA VM LC PAINT materials must not be on the surface due to the low filler content – for individualizing OPAQUE PASTE		PT1	birch	white	<b>PT1</b> <b>PAINT</b> 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	
<b>VITAVM®LC GINGIVA OPAQUE / OPAQUE PASTE</b> – for coating the metal framework prior to the application of the GINGIVA materials		GOL	light flesh	light pink	<b>GOL</b> <b>GINGIVA OPAQUE</b> VITAVM®LC 
<b>VITAVM®LC GINGIVA</b> – to restore the original gingiva situation		G1	rose	dusky pink	<b>G1</b> <b>GINGIVA</b> VITAVM®LC 
		G2	nectarine	orange-pink	
		G4	rosewood	brown-red	
		G5	cherry brown	dark red	
<b>VITAVM®LC WINDOW</b> – low-viscosity material to vary the intensity of the shade of the PAINT-materials – WINDOW must not be on the surface due to the low filler content		WIN	transparent		<b>WIN</b> <b>WINDOW</b> VITAVM®LC 



The new rotary piston syringe was developed especially for VITA VM LC. The high quality of the materials is maintained thanks to the lightproof resin and the air tightness of the syringe.



This rotary piston syringe allows controlled dosage so that exactly the right quantity of VITA VM LC can be applied. After removing material, turn the rotary piston back by one turn to avoid any further flow of the material.



The click lid ensures that the container can be closed securely and thanks to the particular design the syringe remains in one place without rolling.


**VITAVM®LC BASIC KIT\*\*\***

Basic kit for basic layering

Quantity	Content	Material
1	3 g	PRE OPAQUE
11	3 g	OPAQUE PASTE 1M1, 1M2, 2L1.5, 2M1, 2M2, 2M3, 3L1.5, 3M2, 3M3, 3R2.5, 4M2
15	10 g	OPAQUE 2L2.5, 2R1.5, 2R2.5, 3L2.5, 3M1, 3R1.5, 4L1.5, 4L2.5, 4M1, 4M3, 4R1.5, 4R2.5, 5M1, 5M2, 5M3
26	4 g	BASE DENTINE 1M1–5M3
2	4 g	ENAMEL ENL, END
1	4 g	NEUTRAL NT
1	2g	WINDOW WIN
5	4 g	CHROMA PLUS CP1-CP5
2	5 ml	OPAQUE LIQUID
1	50 ml	CLEANER
1	10 ml	MODELLING LIQUID
1	30 ml	SEPARATOR
1	–	Mixing plate, black
1	–	Brush holder
1	pack	Disposable brush tips, 50 pcs.
1	–	Measuring spoon
1	–	Mixing spatula
1	–	VM shade indicator "individual"
1	–	VITA Toothguide 3D-MASTER
	–	Working Instructions

\* Available with reduced range of shades as BASIC KIT SMALL 3D-MASTER.

\*\* Also available as BASIC KIT classical and BASIC KIT SMALL classical in A1–D4 shades. Depending on the country, all BASIC KITs available with an additional quantity of 1 x 5 ml Kuraray Alloy Primer.

**VITAVM®LC PROFESSIONAL KIT**

For natural effects and characteristics

Quantity	Content	Material
5	4 g	EFFECT LINER EL2-EL6
5	4 g	EFFECT ENAMEL EE2, EE3, EE6, EE9, EE12
1	–	VM shade indicator "individual"

**VITAVM®LC PAINT KIT**

Shade-intensive materials

Quantity	Content	Material
10	2 g	PAINT PT1, PT3, PT5, PT8, PT9, PT12, PT13, PT15, PT17, PT19
1	2 g	WINDOW WIN
1	–	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	3 g	GINGIVA OPAQUE PASTE GOL
1	—	VM shade indicator "individual"


**VITAVM®LC CREATIVE KIT**

For individualizing VITA acrylic teeth/CAD-Temp

Quantity	Content	Material
4	2 g	PAINT PT1, PT5, PT15, PT17
1	2 g	WINDOW WIN
2	4 g	EFFECT ENAMEL EE6, EE9
1	4 g	NEUTRAL NT
1	4 g	ENAMEL ENL
1	10 ml	MODELLING LIQUID
1	—	Brush holder
1	pack	Disposable brush tips, 10 pcs.
1	—	Working Instructions



**VITAVM®LC INLAY/VENEER KIT\***

For metal-free restorations

Quantity	Content	Material
6	4 g	BASE DENTINE 1M2, 2M2, 3M3, 2L1.5, 3R2.5, 3L2.5
1	4 g	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



<b>Safety at work, health protection, environmental protection</b>	<p>When working with the product, wear suitable safety goggles/ face protection, gloves and safety clothing.</p> <p>Work under an extraction unit.</p> <p>Avoid contact with skin.</p> <p>In case of contact with eyes, rinse immediately with water and seek medical advice.</p> <p>In case of contact with skin, rinse immediately with copious amount of water.</p> <p>Substances hazardous to water must not be allowed to enter the sewage system/to reach the environment.</p>	
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### Storage information

Do not store above 25°C.

Do not expose to direct sunlight.

It is generally recommended to store composites under cold conditions.

To ensure perfect storage of the paste material in syringes, it should be stored in the firmly sealed container/syringe in a suitable refrigerator at 5-7 °C. To achieve proper consistency of the pastes for processing, they should be kept at room temperature for about one hour. The syringes should not be opened 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.

### Care instructions for removable restorations made from VITA VM LC

- The restoration should be rinsed with water after each meal and cleaned mechanically at least once a day.
- Mechanical cleaning: hold the denture over a washbasin filled with water and clean from all sides.
- Use **a soft or medium-hard toothbrush or denture brush** and **a small quantity of abrasive toothpaste for cleaning**.
- Frequent consumption of coffee, tea, nicotine and, in some cases, medication may cause discoloration. In such cases the restoration should be cleaned repeatedly.
- It is strongly advised not to use cleaning tabs or cleaning solutions. The active substances damage the material surfaces and cause discoloration and plaque deposits.

The following products require hazard identification:		
VITAVM®LC MODELLING (contains triethylene glycol dimethacrylate)	Causes skin irritation. Causes severe eye irritation. May irritate the respiratory tract. May cause allergic skin reaction.	
VITAVM®LC SEPARATOR (contains cyclohexane, toluene, methyltriacetoxysilane)	Highly flammable liquid and vapor. Possible risk of harm to the unborn child.  Prolonged or repeated exposure may cause damage to organs.  May be fatal if swallowed and enters airways. Causes severe damage to eyes. Very toxic to aquatic organisms with long-term adverse effects. Causes skin irritation. May cause drowsiness and dizziness.	    
VITAVM®LC CLEANER	Highly flammable liquid and vapor.	
VITAVM®LC OPAQUE PASTE VITAVM®LC GINGIVA OPAQUE PASTE (contains 2-dimethylaminoethyl methacrylate)	Causes skin irritation. Causes severe eye irritation. May cause allergic skin reaction.	
VITAVM®LC OPAQUE LIQUID (contains methyl methacrylate, ethylene glycol dimethacrylate, 2-dimethylaminoethyl methacrylate)	Highly flammable liquid and vapor. Causes skin irritation. May cause allergic skin reaction. May irritate the respiratory tract.	 
VITAVM®LC BASE DENTINE, ENAMEL, EFFECT ENAMEL, NEUTRAL, GINGIVA (contains 2-dimethylaminoethyl methacrylate, triethylene glycol dimethacrylate)	Causes skin irritation. Causes severe eye irritation. May cause allergic reactions.	

The following products require hazard identification:		
<b>VITAVM®LC PAINT</b> (contains 2-dimethylaminoethyl methacrylate, triethylene glycol dimethacrylate)	Causes skin irritation. Causes severe eye irritation. May cause allergic reactions.  Harmful to aquatic organisms with long-term adverse effects.	
<b>VITAVM®LC CHROMA PLUS, EFFECT LINER</b> (contains 2-dimethylaminoethyl methacrylate)	May cause allergic reactions. Harmful to aquatic organisms with long-term adverse effects.	
<b>VITAVM®LC WINDOW</b> (contains 2-dimethylaminoethyl methacrylate)	Harmful to aquatic organisms with long-term adverse effects. May cause allergic reactions.	
<b>VITAVM®LC PRE OPAQUE</b> (contains 2-dimethylaminoethyl methacrylate)	Harmful to aquatic organisms with long-term adverse effects. May cause allergic reactions.	

**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!**

**Why does the PRE OPAQUE material improve bonding?**

The transparency of PRE OPAQUE ensures perfect curing with a small amount of light even in dark zones independent of the layer thickness.

**Detailed:**

The alloy surface is clean after sandblasting and exhibits countless fine pores and unevenness. PRE OPAQUE has been adjusted in a way to fill these fine pores. Due to the transparency, enough light penetrates into these pores during polymerization with the light curing unit and creates a hard network structure. The filled pores act similar to anchoring elements - identical to the effect of macroscopic retentions. This anchoring effect is also achieved for the OPAQUE PASTE. The transparent PRE OPAQUE allows to achieve a perfect result independent of the layer thickness. Hence reliable use and the application in undercuts or dark zones are improved.

**Why does VM LC OPAQUE PASTE have this particular consistency?**

The consistency of the opaque paste was deliberately adjusted to obtain a so-called visco-elastic liquid. As a result, OPAQUE PASTE exhibits unsurpassed stability at retention and edges.

**Detailed:**

Originally, the opaque paste features gel characteristics, which means that the flowability is very limited. This can be attributed to the development of a micro-fine structure. When the material is spread with the brush, this microstructure is easily destroyed and the paste acts like a viscous liquid which can be perfectly spread. The microstructure is recreated after spreading. The gel structure of the opaque paste is restored very quickly and optimal stability is achieved. This structure can be repeatedly recreated so that the material can be spread with the brush again at any time.

**Why does VM LC OPAQUE powder have to exhibit a wet-lustrous surface prior to polymerization?**

The wet-lustrous surface indicates that sufficient monomers are available to firmly integrate the powder components of the OPAQUE so that the surface will not fade (change in color) after polymerization.

**Detailed:**

OPAQUE LIQUID contains reactive monomers which form a stable network after polymerization; the pigments and powder components of the OPAQUE are firmly integrated into this network. If the time between the application and polymerization is too long, the monomers will partly evaporate on the surface. As a result, not enough network formers are available and the surface may fade (change in color) after polymerization.

**Why is it recommended to store VITA VM LC pastes in the refrigerator?**

Storage of the pastes in a cool place is recommended to keep the product quality and the excellent processing characteristics on an equally high level over an extended period.

**Detailed:**

All veneering resins (composites) contain large proportions of highly reactive monomers which form networks through polymerization. Polymerization can be triggered by various factors. In the case of VM LC, a light-sensitive initiator in the material starts the reaction in the light curing unit. In case of sustained elevated storage temperature, however, individual monomers may be slowly polymerized and affect the processing characteristics of the materials.

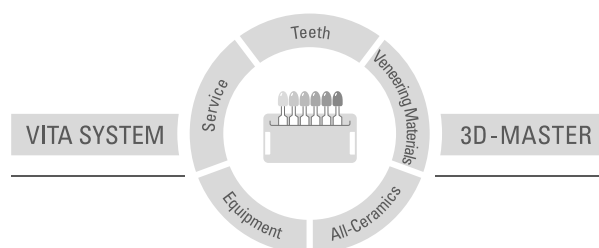
VITA stores both the monomers and the VM LC products under cool conditions to be able to guarantee high product quality and extended durability.

Problem	Cause	Solution
<b>Bonding</b>		
Inadequate bonding to metal	<ul style="list-style-type: none"> <li>• Metal surface contaminated with grease or water</li> <li>• Improper use of the primer</li> <li>• First opaque layer too thick</li> </ul>	<ul style="list-style-type: none"> <li>• Do not touch or steam clean the metal surface after sandblasting.</li> <li>• Processing according to the manufacturer's instructions.</li> <li>• Apply opaque in thin layers. Use of Pre Opaque is recommended.</li> </ul>
Cured composite materials do not bond adequately to each other	<ul style="list-style-type: none"> <li>• No dispersive layer</li> <li>• Moisture between layers caused by steam cleaning</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain dispersive layer after polymerization (do not touch) or wet surface with Modelling Liquid after removing the dispersive layer.</li> <li>• Generally, cured surfaces must not be cleaned with steam.</li> </ul>
<b>Opaque</b>		
Opaque comes off the retentions	<ul style="list-style-type: none"> <li>• Depending on the light curing unit, the framework becomes too hot, opaque liquefies</li> </ul>	<ul style="list-style-type: none"> <li>• Let framework cool down before the application of opaque. Use of Pre Opaque is recommended.</li> </ul>
<b>Composite</b>		
Bubbles	<ul style="list-style-type: none"> <li>• Inclusion of bubbles during layering</li> </ul>	<ul style="list-style-type: none"> <li>• Adapt the materials adequately during the application. Avoid inclusion of bubbles when mixing the materials.</li> </ul>
Softer consistency required	<ul style="list-style-type: none"> <li>• Consistency too firm</li> <li>• Very firm consistency</li> </ul>	<ul style="list-style-type: none"> <li>• Thixotropic consistency has been adjusted; firmer consistency is achieved by pressing with the spatula.</li> <li>• Incorrect storage temperature. Do not store above 25 °C; storage in the refrigerator is recommended.</li> </ul>
Consistency in the open syringe varies considerably	<ul style="list-style-type: none"> <li>• Partial polymerization of the material caused by ambient light</li> </ul>	<ul style="list-style-type: none"> <li>• Seal the syringe immediately after dispensing some material.</li> </ul>

Problem	Cause	Solution
<b>Polymerization</b>		
Materials not polymerized adequately	<ul style="list-style-type: none"> <li>• Incorrect placement of restoration</li> <li>• Lamps too old, polymerization chamber contaminated</li> <li>• Polymerization time too short</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure correct placement in the unit according to instructions on pages 26-27.</li> <li>• Replace lamp of curing-light, clean polymerization chamber incl. filter disc</li> <li>• Polymerize completely according to information on pages 26-27.</li> </ul>
<b>Polishing</b>		
No high luster	<ul style="list-style-type: none"> <li>• Inadequate polymerization</li> </ul>	<ul style="list-style-type: none"> <li>• Observe information on polymerization on this page and on pages 26-27.</li> </ul>
<b>Shade effect</b>		
Shade too grey	<ul style="list-style-type: none"> <li>• Too much Modelling Liquid used</li> </ul>	<ul style="list-style-type: none"> <li>• Use Modelling Liquid sparingly</li> </ul>
Shade too pale	<ul style="list-style-type: none"> <li>• Too much Enamel applied</li> <li>• Minimum layer thickness not observed</li> </ul>	<ul style="list-style-type: none"> <li>• Observe layering pattern</li> <li>• Use additional material in cases of limited space (see p. 16)</li> </ul>
<b>After completion</b>		
Plaque accumulation / discoloration	<ul style="list-style-type: none"> <li>• Inadequate polymerization: <ul style="list-style-type: none"> <li>– Lamps too old, polymerization chamber contaminated</li> <li>– Polymerization time not adhered to</li> </ul> </li> <li>• Insufficient polishing</li> <li>• Use of denture sealant</li> <li>• Use of an ultrasonic unit with needles (surface is perforated and prone to damage)</li> </ul>	<ul style="list-style-type: none"> <li>– Replace lamps of the light-curing unit, clean polymerization chamber</li> <li>– Polymerize completely</li> <li>• High-luster polishing of material according to instructions</li> <li>• Do not use denture sealant, polish to high luster!</li> <li>• Cleaning with ultrasonic unit <u>without</u> needles</li> </ul>
<b>Syringe</b>		
Low-viscosity material oozes out	<ul style="list-style-type: none"> <li>• Too much pressure inside the syringe</li> </ul>	<ul style="list-style-type: none"> <li>• After dispensing, turn plunger back one full turn</li> </ul>

VITA VM LC is available in the VITA SYSTEM 3D-MASTER and VITA classical A1–D4 shades. Shade compatibility with all VITA 3D-MASTER and VITA classical A1–D4 materials is ensured.

With the unique VITA SYSTEM 3D-MASTER, all natural tooth shades can be systematically determined and 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 materials 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 (fault in making the contract, 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 this product information: 03.13

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

VITA Zahnfabrik has been certified in accordance with the Medical Device Directive and the following products bear the mark  0124 :

**VITA VM<sub>LC</sub> · VITA CAD-Temp<sup>®</sup>**

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