VITA**VM**®**7**

Working Instructions

VITA shade determination | VITA shade communication | VITA shade reproduction | VITA shade control

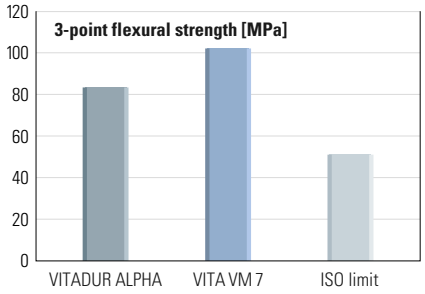
Date of issue: 06.16

VITA shade, VITA made.

All-ceramic system for the fabrication
of inlays, onlays and veneers

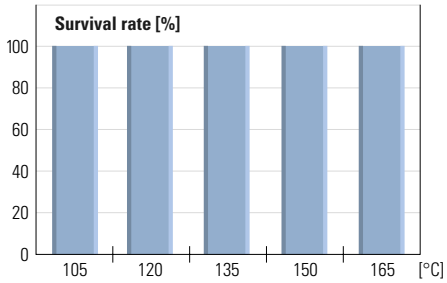
Solubility

Ceramics have generally proved their reliability in various fields of medical supply due to their outstanding biocompatibility. The low solubility of VITA VM 7 ensures high resistance in the oral environment and a prolonged period of wearing.



Flexural strength

The flexural strength values of VITA VM 7 are more than twice as high as the values required by the ISO standard. This excellent result underlines the high reliability of restorations layered with VITA VM 7.



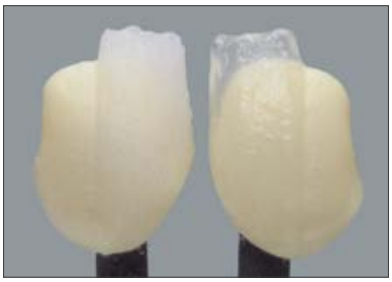
Thermal shock resistance

The thermal shock resistance test is used to measure the absence of stress in a ceramic restoration and for successful coordination of the coefficients of thermal expansion within the system. A survival rate of restorations veneered with VITA VM 7 is ensured at 100%, even with temperature variations of up to 165°C. This illustrates that the ceramic and substructure have been perfectly matched and indicates long-term clinical success.

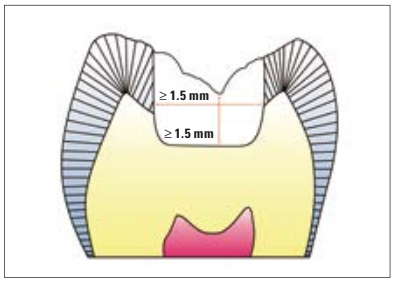
VITA**VM**®**7** – Physical properties	Unit of measure	Value
CTE (25–500°C)	$10^{-6} \cdot K^{-1}$	6.9 –7.3
Softening point	°C	approx. 689
Transformation temperature	°C	approx. 615
Solubility in acids	µg/cm²	approx. 10.8
Density	g/cm²	approx. 2.4
Average particle size	µm	approx. 18
3-point flexural strength	MPa	approx. 106

Firing result

When using dental ceramics, the firing result largely depends on the individual firing procedure of the user. The type of furnace, the location of the temperature sensor, the firing tray as well as the size of the object during the firing cycles are key factors for the final restoration. Our application-technical recommendations for the firing temperatures (regardless of whether they have been provided orally, in writing or in the form of practical instructions) are based on extensive experience and tests. The user, however, should consider this information only as a reference. Should the surface quality or the degree of transparency or glaze not correspond to the result that is achieved under optimum conditions, the firing procedure must be adjusted accordingly.



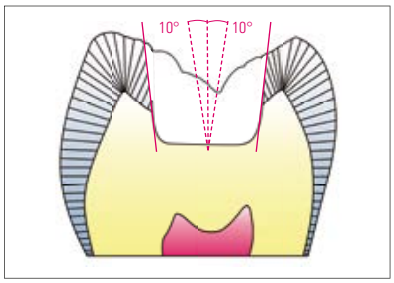
A slight luster of the ceramic surface is an evidence for correct firing. If the ceramic, however, appears to be milky and non-homogeneous, the firing temperature is too low. Approach the correct firing temperature in steps of 5–10°C.



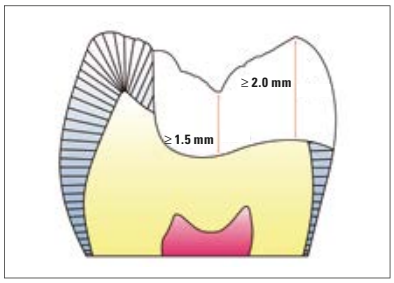
Layer thicknesses

Inlays

Ceramic layer thickness
Area of fissures: **at least 1.5 mm**

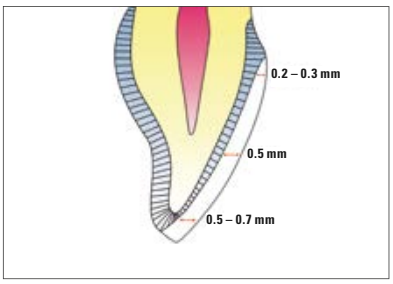


Opening angle >10°



Onlays

Ceramic layer thickness
Area of fissures: **at least 1.5 mm**
Area of the cusps: **at least 2.0 mm**



Veneers

Ceramic layer thickness
Labial: **on average 0.5 mm**
Incisal third: **0.5 - 0.7 mm**
Central third: **0.5 mm**
Cervical third: **0.2 - 0.3 mm**

Contraindication

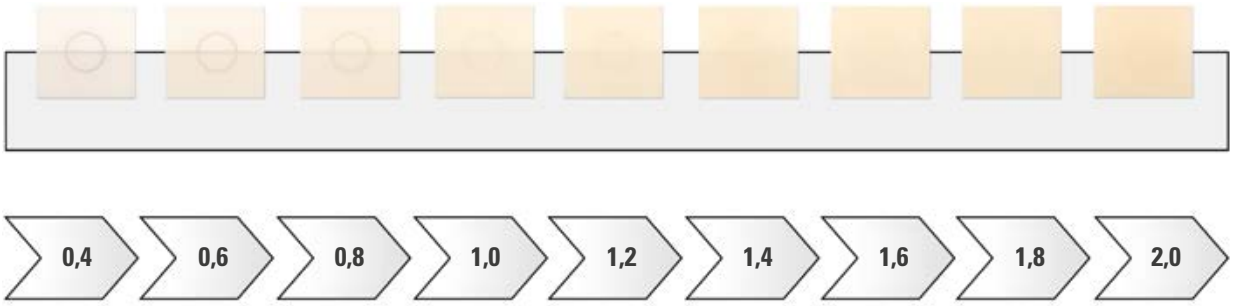
- For patients with parafunctions (e.g. bruxism)
- In cases of inadequate oral hygiene
- If minimum layer thicknesses of the ceramic can not be adhered to

Basics of the preparation

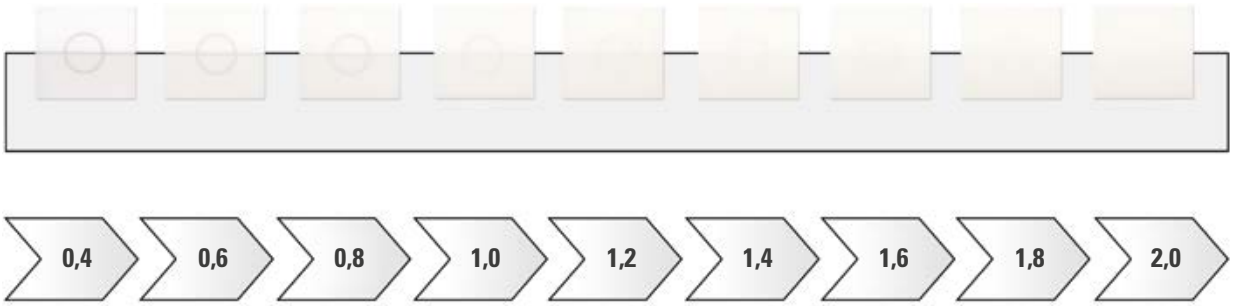
During the preparation the particular material-specific properties of dental ceramic materials need to be observed.
For details, see the brochure "Clinical Aspects of All-Ceramics," No. 1696.

Change of the shade effect (chroma and value)
for different layer thicknesses.

Example: **2**M2



Example: ENL



Fabricating the model
Recommended duplicating material: Dublisil 20 (Dreve Dentamid GmbH)
Recommended die material: Nori-Vest Alumina (Noritake Dental Supply Co., Limited)

To achieve perfect results, 2 models should be fabricated prior to the impression. The initial model is not separated to enable the use as a control model. The second model is used as a working model. Since the dental ceramic is a harder material than plaster, there is a risk of slight abrasion when fitting the structure onto the working model which may result in an inaccurate fit in situ. Final fitting steps can be carried out on the model that has not been separated. Undercuts in the cavities are blocked out prior to duplicating. It is recommended to use spacer varnish to attach a spacer to the bottom of the cavity.

A duplicate of the master model or the master die is fabricated using duplicating material and refractory die material. A thin coat of vaseline is applied to the duplicating base and the duplicating ring; then the master die can be fixed on the duplicating base. A thin stream of duplicating material is poured into the mold to avoid the formation of bubbles. The processing time is approx. 6 min.
After a setting time of approx. 30 minutes, the master die is demolded and the duplicating mold is left for approx. 20 minutes to allow for elastic recovery once it has been demolded. **(Observe the manufacturer's instructions!)**

Processing the refractory die material

Fill the required quantity of mixing liquid into the vacuum mixing bowl (in the required concentration). Add the content of a bag of die material and stir with the spatula; then mix under vacuum. Fill the mixed material on the vibrator into the duplicating mold.
(Observe the manufacturer's instructions!)

Allow to set in accordance with the manufacturer's instructions prior to demolding. Harden the die in accordance with the manufacturer's instructions.

Allow the die to cool slowly after firing.

Important: the die must not be soaked!

Preparatory firings

The preparation border is marked using the VITA Marker (refractory pen).
A firing process is carried out for fixation of this preparation marking:

Recommended firing - fixation firing:

Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °C	→ min.	VAC min.
600	00:00	4:00	100	1000	2:00	–

Sealing the refractory die

In order to seal the surface of the refractory die and to prevent excessively rapid drying when applying the layers of ceramic materials, VITA AKZENT Plus Glaze is mixed with VITA Modelling Liquid 30 M until a thin consistency is achieved. First the die is wetted with Modelling Liquid 30 M (take up a copious amount with the brush). Then a thin coat of glaze material is applied to the cavity bottoms and cavity walls up to 2 mm beyond the preparation border.

Recommended firing - sealing firing

Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °C	→ min.	VAC min.
600	5:00	6:00	62	970	2:00	–

After firing, glaze material is applied again and a second sealing firing process is carried out. It is recommended to extend the predrying time for very large dies.

Completely sealed die model.

Application of VITA VM 7

The ceramic materials are mixed with 30 M liquid for the first dentine firing. Coat the cavity walls and the cavity bottoms of inlays and onlays with the desired shade of BASE DENTINE (max. thickness: 1 mm).

Further layers are built up using the familiar VM layering technique; smaller quantities should be applied and fired for larger cavities.
When restorations are to be reproduced that are primarily in the translucency or incisal area, it is recommended to use only TRANSPA DENTINE or ENAMEL to prevent the restoration from appearing too dark or exhibiting excessively high chroma.

Dentine firing

Due to the white die material that absorbs less heat, firing should be carried out at temperatures that are slightly higher than those given in the VITA VM 7 working instructions. The holding time should be extended by approx. 1 minute for larger models. Veneer after first dentine firing.

Recommended firing - dentine firing

Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °C	→ min.	VAC min.
500	6:00	7:49	55	930	1:00	7:49

Checking the occlusion, glazing and finishing

After the final control firing, the restoration is ground completely on the refractory die model. If required, the entire restoration can be coated with VITA AKZENT Plus Glaze and then individualization can be carried out using the VITA AKZENT Plus stains.
(see VITA AKZENT Plus working instructions, No. 1925)

Recommended firing – glaze firing

Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °C	→ min.	VAC min.
500	00:00	5:15	80	920	1:00	–

Recommended firing – Glaze firing with VITA AKZENT Plus

Predry. °C	→ min.	↗ min.	↗ °C/min.	approx. temp. °C	→ min.	VAC min.
500	4:00	5:15	80	920	1:00	–

Note:
The firing temperatures are based on experience and may vary depending on the size of the investment material die.

Removing the die material

Always make sure that the ceramic restorations have been glaze fired before the die material is removed.
A round bur is recommended for removal of excess die material. The remaining excess is removed by careful sandblasting with abrasive glass beads (50µ) at a pressure of 2-3 bar. Reduce the pressure slightly when sandblasting the margins.

Tip: The risk of damaging the margins can be considerably reduced if a silicone key is prepared before the die material is removed.

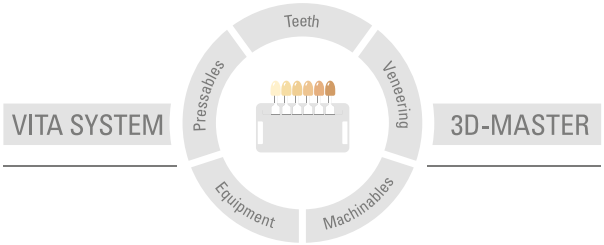
The key should extend slightly beyond the preparation border. After removing the excess material, the restorations are placed in the silicone key and subsequently sandblasted with abrasive glass beads.

Then the restoration is carefully fitted using a suitable occlusion material. The margins must be polished with a rubber polisher that is suitable for dental ceramics. Adjustments must not be carried out with abrasive tools. If glazed surfaces were ground, these surfaces are high-gloss polished with VITA Karat diamond polishing paste and VITA Karat diamond felt wheels.

Completed veneer

VITA**VM®7** veneering material is available in VITA SYSTEM 3D-MASTER shades. Shade compatibility with all VITA 3D-MASTER materials is ensured.

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



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Date of issue of this information: 06.16

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

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

VITA**VM®**7 · VITA AKZENT® **Plus**

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